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THE
COMMENTARIES
UPON THE
APHORISMS

OF

Dr HERMAN BOERHAAVE,

The late Learned Professor of Physic in the
Univerfity of LEYDEN,

CONCERNING

The KNOWLEDGE and CURE of the feveral
DISEASES incident to HUMAN BODIES.

By GERARD VAN SWIETEN, M. D.

Translated into ENGLISH.

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COMMENTARIES
UPON THE
APHORISMS
OF
HERMAN BOERHAAVE.
CONCERNING THE
KNOWLEDGE and CURE of DISEASES.

Of DIFFICULT DELIVERIES.

S E C T. MCCCX.

A DELIVERY is difficult, either through the defect of the mother or the child.

Properly speaking, no delivery can be called absolutely easy, since God pronounced this sentence against *Eve* on account of her transgression: “I will greatly multiply thy sorrow and thy conception; in sorrow shalt thou bring forth children *”. Child-bearing is therefore always attended with pain, sometimes more grievous and lasting, sometimes more slight, and of shorter duration; but it is in no case totally exempt from pain. It may sometimes happen that pain may not be felt, even when there is a cause capable of producing it in the body; but then, according

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* Genes. chap. III. ver. 16.

according to *Hippocrates* (as has been observed in §. 1.) *Qui aliqua parte corporis dolentes, ut plurimum dolorem non sentiunt illis mens laborat*^a: “Those who do not feel pain, when any part of the body is affected by a cause productive of pain, are not in their perfect senses:” for it sometimes happens that women in convulsions, or an apoplectic fit, are delivered of children without feeling any pain; but the delivery cannot be said to be easy, as the worst consequences are then to be feared: for this reason *Hippocrates*^b justly represents a delivery without pain as dangerous.

From these considerations, it is obvious that it cannot be an easy matter to give an adequate definition of a difficult delivery, since in the course of nature no delivery is free from pain and anguish. For it seems hard to assign a boundary, by which an easy delivery may be distinguished from another, which may be properly called difficult, though it cannot be reckoned amongst the most difficult: for we can form a judgment concerning these only by comparing them together. Some women are delivered with much greater ease than others; and even in the same woman a delivery is at one time attended with less pain than at another, as has been frequently remarked. *Hippocrates*^c, having advanced that a woman brings forth with ease when the child comes out of the womb with its head foremost, but with difficulty when it comes out transversely, or puts forth its feet first, adds what follows: *Ex puerperis autem maximè laborant primiparæ, quod dolores nondum expertæ fuerint* (διὰ τὴν ἀπειρίαν τῶν πόνων); *Et dolent quidem toto corpore, maximè autem lumbis Et coxendicibus; nam coxendices ipsis diducuntur. Quæ verò magis partus expertæ sunt, minus dolent primiparis. At quæ multoties pepererunt, omnium minime dolent*: “Women suffer most at their first lying-

^a Aphor. 6. Sect. 2. Charter. Tom. IX. pag. 47.

^b Coac. prænot. No 538. Charter. Tom. VIII. pag. 884.

^c De natura pueri, cap. 11. Charter. Tom. V. pag. 324.

“ lying-in, because the pains of child-bearing are new
 “ to them; and they suffer pain in every part of the
 “ body, but chiefly in their loins and their hips,
 “ for their hips stretch and jut out in delivery. Those
 “ who have often been delivered, feel less pain than
 “ those who are delivered for the first time; but
 “ those who have been most used to child-bearing
 “ feel least pain of all.” Thus though he ascribes
 the ease and difficulty of delivery to the various position of the fœtus, he acknowledges that delivery is difficult to women who are brought to bed for the first time, let the position of the fœtus be what it will.

A difficult delivery has by many been defined “ a
 “ protrusion of the fœtus with great pain, and with
 “ danger to the mother, the child, or both.” But most women in labour are delivered with difficulty, though not with such imminent danger either to the mother or her offspring. *Mauriceau*^d has divided delivery into legitimate or natural, and the illegitimate, or that which is against nature. He enumerates four conditions as necessary to a delivery, in order to denominate it legitimate and natural, *viz.* that it should be made in a proper time after conception; that it should be speedy, and not attended with untoward accidents; that the fœtus should come out alive, and in a favourable attitude. He maintains that if any of these conditions should be wanting, the delivery should not be called legitimate and natural, but contrary to nature; and it is the more contrary to nature the more it is deficient in these conditions. Certain it is, however, that in women who are brought to bed for the first time, delivery is seldom speedy, though all the concomitant circumstances should be natural. Indeed, tho’ it is the received opinion that every expeditious delivery is favourable, and tho’ women

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in

^d Liv. II. chap. 2. pag 202.

in labour desire nothing more, the skilful are of a very different opinion ^e. A speedy delivery is seldom hurtful to the child, but is often dangerous, and sometimes fatal to the mother; for she runs a risque of dying of a violent hæmorrhage soon after she is brought to bed. Add to this, that the parts through which the new-born infant is to pass give way, and are gradually dilated in a slow delivery, whereas they are often torn in an expeditious one, whence very dangerous consequences may arise.

Besides the natural delivery and that against nature, *Mauriceau* in another place ^f speaks of the laborious delivery, in which both the mother and the child, though in a favourable position, suffer more than usual; he however reduces the difficult delivery to the same class with the laborious.

As *Mauriceau* ^g has laid it down as a rule that a delivery, in order to be denominated legitimate and natural, should be at a proper distance of time from conception, and that is generally the space of nine months, we know at what time a delivery is to be expected. We at the same time know that an exact calculation cannot easily be had in this case, as all women are not aware of the precise time of conception, as many only think themselves with child when they perceive their menses cease to flow, and as some retain something of their monthly emissions after they are with child. For these reasons, most of those who have written upon midwifery are of opinion, that a delivery may be natural in ten months or more after conception, as well as in nine.

We read ^h, “ That a woman of a good character
“ and unquestioned modesty, was brought to bed
“ eleven months after the death of her husband, and
that

^e Levret. l'Art des Accouch. pag. 93.
pag. 259.

^g In the passage above cited.
noct. Attic. Lib. III. cap. 16. pag. 103.

^f Ibid. chap. x.

^h Aul. Gellii

“ that a suit was commenced on account of the time,
 “ because it was written by the *Decemviri* that a man
 “ is born in the tenth, and not in the eleventh month
 “ after conception : but that the emperor *Adrian*
 “ having taken cognizance of the cause, declared that
 “ a legitimate child might be born in the eleventh
 “ month after conception. This decree of the emperor
 “ *Adrian* we have read ; in it he affirms that he de-
 “ cided this cause, after having inquired into the
 “ opinions both of antient philosophers and physici-
 “ ans.” *La Motte*ⁱ, so justly celebrated for his can-
 dour, enumerates many cases, which shew that the
 time which elapses between conception and delivery
 sometimes exceeds the space assigned by the emperor
Adrian. 'Tis his opinion, that this happens chiefly
 when the fœtus, being weak, has occasion to make a
 longer stay than usual in the mother's womb, in order
 to draw necessary nutrition, and swell to a proper
 bulk. We meet with a more remarkable case^k of a
 woman, who after having been six weeks married, began
 to feel the pains to which women with child are sub-
 ject, yet her monthly emissions did not discontinue.
 About the middle of the fifth month she felt the
 child move, and her breasts began to swell : on the
 eighth month a few drops of thick reddish milk flow-
 ed from her breasts : on the beginning of the ninth
 month her legs swelled, and her veins were swoln : on
 the eleventh month she was seized with violent pains
 in the back and belly : the midwife being sent for,
 did not find her any way in readiness to be brought
 to bed ; the day following, about three pounds weight
 of reddish water flowed from her ; her pains lasted
 three days together ; her menses flowed, but not co-
 piously ; her pains ceased, and she was very well ; her

B 3

belly

ⁱ *Traité des accouch. &c. Liv. I. chap. 28 pag. 121, &c.*

^k *Academ. de Scienc. l'ann. 1753. in 4to. Hist. pag. 139. et seq.*

belly continued swelled, and her breasts swelled excessively.

She consulted the most skilful physicians and surgeons, and amongst others the celebrated *Winslow*, who was at a country house in the neighbourhood, all of whom affirmed that she was pregnant.

On the eighteenth month of that extraordinary pregnancy, the monthly flowing, which was till then red, turned white, and constantly returned at the usual time, she declared that she felt the motion of the child: a very skilful surgeon, however, having touched her abdomen, declared that he could perceive no motion; but he found that her belly was stiff like a drum. For sixteen months she continued in the same state, excepting only that the swelling in her legs subsided, the veins still remaining swollen. On the 35th month she was delivered of a male child that lived three days. The mother recovered her health after being brought to bed. The child and the placenta were of the usual size. The same woman soon after her delivery, again exhibited all the symptoms of pregnancy, and thinks she feels the motion of a child in her belly swelled to an enormous size. In this condition she has been five years and eight months, but in good health, and able to do her accustomed work.

But it is common with some women to be delivered before nine months are at an end. *La Motte*¹ saw a young woman, who was delivered of a son seven months after she was married, which made the husband suspect his wife's chastity. In the first commerce she had with her husband after her delivery, she again conceived, and was delivered of a second son at the end of seven months: they both grew up to be men, and served in the army. The same woman's daughters were delivered in the same manner, in the seventh month after conception; so that it seems to have

¹ *Traité des Accouch. Liv. I. chap. 28. pag. 122.*

have run in the blood of the women belonging to this family, to bring forth children in the seventh month after conception. We meet with a similar case in the same author.

Hence *Mauriceau* lays it down as a rule ^m, that delivery is then effected, when the womb cannot bear to be stretched more than it has been, which proceeds from the womb itself, as has been observed in the foregoing chapter; or from the rapid or tardy increase of the foetus that fills the womb. For this reason, he imagines that women who are with child of twins are more speedily delivered than others, because the womb is more distended and irritated by the more frequent motion of the foetus's. Children born seven months after conception, he looked upon as having so bad a chance for living, that he assures us he has known but few live above fifteen days. The observations of *La Motte* and others prove the contrary; and I remember to have seen some young fellows of robust and healthy constitutions, who to my certain knowledge were born seven months after conception. 'Tis true indeed they are, generally speaking, weak and of low stature. If a foetus, not higher than the palm of a man's hand, may be so brought up as to live to the age of eighty, this may be much more reasonably hoped of a child born seven months after conception.

Nor was it the fortune of *Licetus* alone (see Sect. 1309.) to be bred up to manhood, contrary to all expectation; a later and more extraordinary instance proves the same thing. In the fifth month after conception, a foetus was brought into the world alive, but puny and weak to excess: it did not cry, and it seemed hardly able to breath; the eyes were closed, the limbs were flabby and relaxed; some little motion and the warmth of the body were the only signs of life it exhibited. Being wrapt up in soft linen, it was

cherished with a fostering heat; a little lukewarm milk was given it drop by drop; this it swallowed; it continued exactly in the same state for four whole months; it's motion was very inconsiderable, and it uttered no cry: it voided no excrements. When these four months were at an end it began to cry, to void excrements, to move its body, to suck, to grow like other children, and that so well, that in about sixteen months after its birth it surpassed other children of the same age in strengthⁿ. The excellent author was justly surpris'd that that præmature fruit could live as a foetus in the time that preceded its maturity.

It appears from the whole history of pregnancy that the foetus makes daily advances towards perfection in the womb, and acquires new strength; wherefore it is not easy to discover why a foetus of eight months should be weaker, and less capable of living than a foetus of seven months, as *Hippocrates* maintains, who is followed by many others: but nothing can be more true than that some maxims hold good in physick, tho' the opposite opinion seems to be supported by the deductions of reason. Thus *Peu°* informs us, that many robust and vigorous children are born seven months after conception; but that those born eight months after conception are generally weak and short liv'd. *Mauriceau*^p maintains the opposite opinion, and supports it by a variety of observations. *Drelin-court*^q may be consulted upon this subject, who seems to have proved tolerably well, that a foetus of eight months, if its birth be owing to disease or accident, is in danger; but if it comes into the world of its own accord, has as good a chance for living as a foetus of seven months.

It is sufficiently evident from what has been said, that the time between conception and delivery is very doubtful

ⁿ Brouzet essai sur l'education medic, &c. pag. 37, & seq. in notis.

^o La pratiq. des accouch. Liv. I. chap. 9. pag. 95.

^p In the passage last cited,

^q In opuscul. pag. 120.

doubtful, not in different women only, but even in the same woman, we shall now treat of those symptoms which shew that delivery is near being effected, as well as of those which shew that the pregnant woman is actually delivered, and by what signs a physician may form a judgment whether a delivery will prove easy or difficult.

A few days before delivery the swelling of the abdomen descends; the swelling in the upper part of the abdomen subsiding, an unusual pain is felt in the loins; urine comes frequently, but with difficulty, from the patient; ^r a slimy humour flows from the vagina. These symptoms give just grounds to apprehend that the time of delivery is drawing nigh, but they do not amount to a certain proof: for at the time that the child is turned, which was before placed with its head towards the upper parts of the womb, many of these symptoms occur. This turning of the foetus often happens on the eighth month of pregnancy; sometimes sooner, sometimes later, and then delivery is thought to be at hand. *Mauriceau* ^s informs us that he has often seen this, and gives a remarkable instance of a surgeon's wife, who in her eighth month, whilst the child was turned about, felt pains so violent in her abdomen, that she took it for granted she was just going to be delivered, and therefore prepared every thing necessary upon the occasion: but she continued to bear the child during a whole month, and was at last happily delivered. I have known the same thing happen to my own wife, and to many more. Wherefore, whilst we remark such symptoms, we should take care not to be too forward in pronouncing delivery to approach.

We are then certain that a woman with child is upon the point of being delivered, when she feels a pain in her loins, not continued, but recurring by fits;

^r *Mauric. Traité de malad. des femm. gross. Tom. I. Liv. II. chap. 2. pag. 211, 212.* ^s *Ibid. chap. 5. pag. 235.*

sits; which pain passing through the sides of the abdomen, ceases about the pubis, with a sense of a sort of depressing tenesmus. These are by midwives called the true pains; but they are called spurious if the pains are felt in the abdomen alone; or if after having taken rise in the abdomen, they run back towards the loins; for those spurious pains do not promote the delivery; on the other hand, they rather retard it; and if they should prove very acute, they ought to be removed by opiates, and then they are succeeded by the real pains which precede delivery. This I have observed both in my own wife and in many other women. The pulse then becomes higher, and more quick. Respiration appears to be more difficult whilst the woman in labour, making an effort at every pang, keeps in her breath. All these symptoms are increased as delivery approaches, whilst violent pains follow each other with a rapid succession. *Hippocrates* had expressed himself thus ^t, *Affero autem mulierem, ubi pariet, crebrum spiritum emittere, &c. tum vero potissimum crebro respirat, ubi partui proxima est, tumque maximè lumbis dolet; nam et lumbi à fœtu percutiuntur*: “ I assert that a woman, when she is about to be delivered, breathes quick, &c. but she breathes fastest when she is nearest to delivery, and then she feels the greatest pain in her loins; for her loins are struck by the fœtus.” *Mauriceau* ^u has collected all these symptoms, at the same time adding, that the pudenda then swell, and that women in labour are then subject to vomit; which he tells us is not a bad sign, as it is vulgarly thought, but an indication of an approaching delivery. This I have often seen, and this *Manningham* ^x confirms in these words: *Vomitum verò inter puerperæ dolores si supra modum non sint, nunquam*

^t De morb. mulier. Lib. I. cap. 32. Charter. Tom. VII. pag. 749. ^u In the place already cited, pag. 212. ^x Art. obsteric. compend. pag. 42.

quam non utiles sunt : “ Vomiting, during the pains of “ delivery, is beneficial if it be not excessive.” *La Motte*^y informs us, that he attended a woman in labour who vomited at every pang, and thereby suffered great torment, having never been used to any thing of the kind when brought to bed before. Whilst he prepared to relieve her, the last pang came, which forced a child in perfect health out of her womb. Instructed by experience, he represents vomiting as a symptom of approaching delivery ; he however advises those who attend a woman in labour, not to be too hasty to prophecy a happy delivery, as unhappy accidents often happen unexpectedly, and without any apparent cause. With regard to that vomiting which happens at the time of delivery, *Manningham*^z gives us to understand, that if vomiting follows as soon as the violent pains begin to cease, there is reason to fear the womb’s being torn.

Mauriceau has likewise observed^a, that when delivery is at hand, the body of a woman in labour trembles, especially the legs and thighs ; and that then she feels no cold, but on the contrary is warm all over : that trembling however is not a bad omen ; it is rather a favourable one. For we read in scripture^b that God said to Moses, “ This day will I begin “ to put the dread of thee, and the fear of thee, upon “ the nations that are under the whole heaven, who “ shall hear report of thee, and shall tremble and be “ in anguish, because of thee.” For then or soon afterwards it comes to pass, that the humours that flow from the womb are tinged with blood, which is justly looked upon as a sign that the delivery will be soon compleated ; nor does that inconsiderable flowing of blood proceed from the mouth of the womb’s being torn, but rather from the skin’s being separated from the

^y *Traité des accouch.* chap. 25. pag. 114. ^z *Art. obstetric.* compend. pag. 15. ^a In the place above cited, pag. 212, 213.
^b *Deuteron.* chap. 2. ver. 25.

the womb, whilst the humours are ready to run out, as was shewn in the preceding chapter upon the diseases of women in labour^c. Great care should be taken to distinguish whether the pregnant woman feels the true pains of delivery or not; for *Manningham*^d has taken care to apprize us that the child, turning itself in the last month that it is carried in the womb, often occasions spurious pains by its unusual motion, which bring on the efforts to delivery too soon. Unskilful midwives sometimes advise pregnant women to second, by powerful efforts, the pains which arise from the turning of the child, not quite ripe for delivery, especially if they find the mouth of the womb already open. *Mauriceau*^e relates a case of this kind. He was sent for to a pregnant woman, who thought she was upon the point of being brought to bed, two midwives who were present affirming the same thing. Examining her womb by his touch he found that it was opened the breadth of his thumb: he touched the child's head, covered with membranes which stuck to it, lax and yielding, and were neither tense nor turgid. Though she felt tormenting pains in her womb for six days together; and though the mouth of her womb was open, *Mauriceau* declared that he found in her no disposition to delivery; and her pains ceased, as well by the application of a gentle clyster, as by the heat of the bed; and the pregnant woman could for a whole month do the business of her house with alacrity; the month being expired, she was happily delivered of a living child. From hence he has justly inferred, that all the symptoms of delivery are doubtful, excepting only the true pains, which beginning at the loins, and advancing towards the pubis, discontinue, with a sense of tenesmus; and at the same time the waters begin to gather; that is,

mem-

^c Mauric. traité des malad. des fem. gross. Tom. I. pag. 213.

^d Art. obstetric. comp. pag. 14. ^e In the place last cited, pag.

membranes may be felt with the finger turgid with water collected between them and the head of the child, which bear upon the open mouth of the womb and fill it. For *Manningham*^f has laid it down as a maxim in midwifery, that the opening of the mouth of the womb alone is a fallacious token of approaching birth. *Apertio oris uteri mulieris gravidæ non semper parturitionis est signum certum; nonnunquam enim orificium adeo patefactum in quibusdam invenitur, ut digitum inferri sinat mensem ante partum:* “The opening of a pregnant woman’s womb, says he, is not always a sure token of approaching delivery; for sometimes a month before delivery, the orifice is in some women found so wide open, that a man might thrust his finger into it.”

When it is evident, from indubitable signs, that birth is approaching, the same author gives us this excellent advice ^g, *In principio doloris, quærendus est fœtus et uteri situs:* “In the beginning of the pregnant woman’s throws, the fœtus and the situation of the womb should be sought,” in order to form a judgment of the ease or difficulty of the ensuing delivery, that midwifery may apply in due time the requisite assistance, in order to alter and correct the disadvantageous situation of the fœtus: for many women in labour have perished, whose lives might have been saved if proper care had been taken of this. Complaints of this negligence or want of skill in midwives, occur in every author that has wrote upon the subject.

The following are the chief signs from which midwives are used to prophecy a happy delivery: ^h *Si uteri infima pars in pelvem illapsa fuerint, ita ut in limine vaginæ facile tangi possit: si os uteri tenue, molle, latèque patulum sit et per aperturam oris uteri deprehendatur, infantem capite ad exclusionem prævio sive*
prono

^f In the place last cited. ^g Art. obstetric. compend. pag. 15.

^h Deventer novum lumen obstetric. cap. 18. pag. 62, 63.

prono ferri, neque brachio neque funiculo umbilicali intercedente ; si simul aquæ in latitudinem se complanent, non-nisi facilis celerque partus expectandus est : “ If the lowest
 “ part of the womb should fall into the pelvis, so that
 “ it may be easily touched in the entrance of the vagi-
 “ na : if the mouth of the womb be thin, soft, and
 “ wide open ; and if it be found at the opening of the
 “ mouth of the womb, that the head of the infant is
 “ in a proper attitude to come out, neither the arm
 “ nor the navel-string coming between ; if the waters
 “ sink to a level surface ; an easy and expeditious deli-
 “ very may be expected.”

All these symptoms are favourable ; yet from these we cannot have any certainty concerning other obstacles which may lie hid : the circumvolution of the navel-string round the neck, or any other member of the child, may render delivery difficult : a hydrocephalum, a swelled abdomen, or a monstrous figure, may have the same effect. So that from the above symptoms it may be concluded, that all things promise a happy delivery ; but no certainty of an easy and happy delivery can be had from them : thus there will always be occasion for some caution in making this prognostic.

Delivery is foreseen to be difficult, when symptoms opposite to those taken notice of above are observed : *Os uteri altius, parum aut omnino non apertum, præ-acutum crassum atque durum, aut humores in longitudinem coarctatos :* “ When the mouth of the womb is
 “ raised high ; either not open at all, or but a little
 “ open ; when it is sharp, rough, and hard ; or the
 “ humours forced into a long narrow passage :” for then the membranes, distended with humours, will not form a plain or a roundish swelling, but will be lengthened out in the shape of a pudding. If from these symptoms a difficult delivery should be foreseen, it should not be told the woman in labour, but to her
 her

her friends and those present, and that with prudent caution.

It is evident from what has been said, that the impediments which render delivery difficult, are owing either to the mother or the foetus, and sometimes to both; and then delivery becomes extremely difficult. These particulars should be considered separately.

S E C T. MCCCXI.

DIFFICULT delivery is owing to the mother's defect, when she wants strength to drive the foetus out, or when the parts of generation are in a bad state.

As the head of a man is larger, in proportion to the rest of his body, than that of other animals, a woman is delivered with greater difficulty than any other animal, and has occasion for a much greater effort; for which purpose a due degree of strength is required. It has often been said, that a robust and healthy foetus assists it's mother's efforts by it's own, that it may the sooner make it's way to the light of heaven: but if all particulars are duly weighed, it will be acknowledged that the foetus can give but little assistance upon this occasion. By the motion of it's limbs, and by the dilating of the womb, occasioned by the head's entering it, it irritates it, and excites the efforts of the mother, by which alone it is forced out: for he who has but once seen a woman in labour, cannot be ignorant with what efforts, what force, a lying-in woman exerts herself, whilst the foetus comes into the world. She keeps in her breath; all the muscles of her body are stiff; she fixes her feet to some firm prop, and with her hands eagerly catches at the standers-by, or whatever comes

in her way : the muscles of the abdomen, the back, and the neck, are stiff : her face is red, swelled, and bloated ; and, to say all in one word, the whole strength of her body is at once exerted to drive out the foetus, which at the time of delivery seems to be totally passive, and not in any respect active ; and even if it was active, the little strength of it's tender body could not in the least assist the strong efforts of the mother.

I am not ignorant that *Harvey*ⁱ has laid it down as a rule, *In viviparorum partu præcipuam nascendi causam foetui deberi. Molimini, inquam, ejus non autem ponderi, ut Fabricius voluit, &c. ipse foetus prono capite uteri claustra aggreditur, eademque propriis viribus recludit, et in lucem elucatur :* “ That in the birth of animals that bring forth living creatures, the chief cause of birth is in the foetus ; I mean as to it's effort, not to it's weight, as *Fabricius* would have it, &c. the foetus itself runs it's head against the inclosures of the womb, opens them by it's own strength, and struggles into day-light.” He thought his opinion confirmed ; because in creatures that lay eggs, the foetus itself, and not the mother, breaks the shell of the egg ; and this happens likewise in the eggs of many insects, and of fishes. But we should be very cautious with regard to comparative anatomy, how we imagine that the same things happen in human bodies in the same manner we observe them in other bodies. Eggs when laid by the mother, if they contain young ones, want only a fostering heat, whether the mother yields this by hatching them, or whether it be produc'd in any other manner, which is now very well known. Add to this that a chicken has a rough beak, solid feet, and can move with great vigour considering it's size ; for as soon as ever
it

ⁱ De generat. animal. pag. 366, 367.

it disengages itself from the egg-shell, it runs very swiftly. Man at his birth, by his cries, implores that assistance which he stands in need of; nor is he ever able to force the inclosures of the womb by his own strength. Can the obtuse figure of the fœtus's head, and it's bulk, form a proper instrument to dilate the orifice of the womb, which must be dilated before the head of the fœtus can enter it? The efforts of the mother, and the powerful contraction of the womb, whilst they labour to dilate it's orifice already begun, push the membranes full of humours into a place less capable of resisting. In this manner humours are formed, which gradually dilate the mouth of the womb, the head of the fœtus not having then entered the orifice of the womb. The membranes being broken, the humours running out, the head of the fœtus rolls into the orifice in natural delivery; but the fœtus does not make it's way by it's own strength; strong efforts of the woman in labour follow; by these the delivery is compleated: of these there would be little occasion, if the fœtus could force it's way into the world by it's own endeavours. *Harvey* * has attempted to confirm his opinion by observations. He relates the following event: *Mulier quædam apud nos (compertum narro) sub vesperam mortua, in conclavi sola relicta est: mane autem sequenti, inter femora ejus repertus est infans, qui proprio nisu exitum sibi comparaverat:* "A woman in
 "our country (it is a known fact) dying in the
 "evening was left alone in her chamber: the
 "next morning a child was found between her
 "thighs, having made it's way into the world by
 "it's own efforts." I have not the least doubt of the truth of this observation, as we meet with facts of the like nature in other authors; and I myself have known such things happen; but I think it can by no means be concluded from this observation,

that the infant made it's way into the world by it's own efforts. It is but too well known that the symptoms of death are extremely doubtful; nor is it at all improbable that this poor wretch being left for dead, revived again, and after having made another effort to bring forth, forced out the foetus, and being destitute of assistance, perished.

But the womb itself, by it's own contraction, might have forced out the foetus which seemed ripe for birth. *De Graaf*¹ has, in dissected rabbits, observed the womb to be agitated by a fluctuating and peristaltic motion, and by it's own force to drive out the foetus. Tho' *Harvey* ascribes delivery to the strength of the foetus, he cannot deny that diseased and languid foetus's, are sometimes forced out; and that they sometimes come into the world before their time; but he says in that case, *Non tam partus fit quàm abortio, fœtusque ejicitur potiùs quàm paritur*: "It is not so properly a delivery as an abortion; and that the foetus "is rather thrown into the world than brought forth^m." He however acknowledges, with his usual candour, that the womb even upon this occasion affords some assistance, and proves it by the example of a woman, whose womb being fallen, hung down to her knees, surpassing a human head in bigness; and gaping asunder in it's lowest part, poured out corruption and matter like an ulcer. He then adds what followsⁿ; *Ego re inspectâ (tactu enim non explorabam) cancerum aut carcinoma uteri jam affore metuebam, ideoque ligaturum et abscissionem meditabar; et interea consului ut blandis fotibus dolorem leniret. Nocte verò sequenti ex eodem tumore infans spithamæ longitudine, perfectè formatus sed mortuus protruditur et postridiè ad me defertur*: "Upon inspection (for I did not examine "the Part by my touch) I thought the womb was "threatened with a cancer or a carcinoma; wherefore

¹ De mulier. organ. pag. 325.
pag. 369.

^m Harv. de generat. animal.
ⁿ Ibid. pag. 370.

“ fore I proposed making a ligature and an abscission,
 “ and in the mean time took care to assuage her
 “ pain by lenient applications. On the night fol-
 “ lowing a child, the length of a span, completely
 “ formed, but dead, was forced out of the same
 “ tumour, and the next day was brought to me.”

In this case it is evident that the efforts of the mother could not act upon the pendant womb, and that the dead foetus could contribute nothing to the delivery; it should therefore be ascribed to the contraction of the womb alone. Therefore the womb, by it's own force, contributed to the delivery; and *Harvey* acknowledges °, that we may observe not in men alone, *Etiam in aliis animalibus (utpote cane, ove et jumentis) liceat observare hunc connixum non esse uteri aut ventris solius actionem sed totius quoque corporis conatum:*

“ but in other animals likewise (as in dogs, sheep,
 “ and beasts of burden) that this struggle is not the
 “ action of the womb or the belly alone, but the ef-
 “ fort of the whole body.” Thus he acknowledges the mother's effort to be another cause of delivery; yet he soon after ^p ascribes a most difficult delivery of a robust child to the strength of the infant alone. For a woman, who after a difficult and laborious delivery, had the whole inside of the vagina torn and skinned, when the sides of the vagina afterwards stuck together: *Unde nec virili membro nec specillo quidem ingressus patuit neque menstruorum fluxui egressus:* “ so that neither the virile member nor a probe
 “ could enter it, nor the menses flow from it”—

became pregnant; and delivery drawing nigh, she was tormented in so dreadful a manner, that she had laid aside all hopes of bringing forth, and bid her husband and friends farewell: *Cum ecce inspinatò robusti admodum fœtus summo conamine totus ille tractus dirumpitur, fitque insperatus partus; et validus*
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infans

° Ibid. pag. 366.

^p Ibid. pag. 368.

infans sibi matrique suæ salutis auctor extitit, viamque apertum aliis post nascendis reliquit : idoneis enim remediis adhibitis, mater pristinam valetudinem recuperavit :
 “ when all on a sudden, by the effort of a very robust foetus, that whole tract was broken, and an unexpected delivery was effected ; and a strong infant was born, the preserver both of it’s own and it’s mother’s life, who left a passage open to others that were to be born afterwards ; for proper remedies being applied, the mother recovered her former health.” Who can imagine, that so great an obstacle should be surmounted by the strength of the most robust foetus ! Is it not rather to be ascribed to the powerful efforts of the woman in labour ? From hence we learn the great influence of prejudice over men of the greatest candour and ingenuity ; men, as it were, born to investigate nature.

It may justly be inferred from what has been said, that weakness may be properly reckoned amongst the causes of difficult delivery ; so that, as has been observed upon another occasion in Sect. 1291. the *Spartan* Virgins did very well to strengthen their bodies with violent exercise, that being strong and vigorous when they conceived, they might be the better able to struggle with the pains of child-bearing.

But even a *Spartan* matron might find delivery difficult, nay, sometimes even impossible, if the parts of generation were in a bad state, and would not yield a passage to the child.

S E C T. MCCCXII.

IF the strength of a woman in labour should fail, it should be raised by uterine, cardiac and sternutatory remedies.

Physicians should take great care not to hurt their patients by prescribing cordials : for it very rarely happens

happens that the weakness of the woman in labour renders delivery difficult. I have often observed that whilst the standers-by have thought the patient almost ready to faint through weakness, they have all been surprised at her strength when she made the last effort to be delivered of her burthen. The woman in labour, and those that are with her, generally wish that delivery might be accelerated. But I before apprised the reader, that in women who lie in for the first time, and they are generally the most impatient, a speedy delivery is not the safest, that on the contrary a slow delivery is to be preferred, that the parts may yield by degrees, and may not immediately be violently distended. We should always be mindful of the prudent advice of *Galen*, (see Sect. 6.) *Sive purgans dederis sive vomitorium, &c. prima exhibitio in tua potestate est, reliqua sibi fortuna vindicat* : “ When you prescribe either a purging draught or “ a vomit, the administering it depends upon you, “ the consequences upon fortune.” For if at the time of delivery you should administer warm cordials too often, or too copiously, to restore the lying-in woman’s strength, or accelerate delivery, these will continue to operate after delivery. But all physicians acknowledge that nothing is more advantageous at that juncture than composure of mind and body, and a gentle motion of the fluids, which will be accelerated after delivery, whilst the cordials which were copiously administered at the time of bringing forth still continue to stimulate. How wisely does the celebrated *Boerhaave* remind us of this, speaking of the virtues of oil of cinnamon ; *At oleo cinamomi suppar videri nondum constitit, quotiescunque collapsæ gravidarum, parturientium, puerperarum, vires, absque inflammatione, absque ruptis, hætenusque huiusmodi vasis* : “ But we have never seen any thing equal to cin- “ namon for restoring the strength of pregnant wo- “ men, and women in labour, when there is no in-

“ inflammation in the case, nor vessels broken nor wide
 “ open ^a.” But it is very certain that whilst the
 placenta is separated from the womb, the vessels are
 wide open, and copiously pour out blood. Whilst
 the genuine pains of delivery follow with intervals
 too short, the pulse becomes stronger and quicker,
 the face becomes tense and red, heat is increased
 through the whole body. Let physicians judge then
 whether warm stimulating cordials can, in such a state,
 of the body be of any service? For tho’ at the begin-
 ning of delivery the patient is not in such a state, she
 quickly will be so, and that in the most legitimate
 and natural delivery. In some places it is customary
 for midwives to carry little chests with them, filled
 with spirituous remedies, which they sometimes ad-
 minister in large doses to women in labour, and the
 more freely, the more unskilful they are: this has
 often given occasion to melancholy accidents. For
 if a delivery should be rendered difficult, not by
 languor, but by the unfavourable situation of the
 foetus in the womb, or by the oblique position of
 the womb itself; the more the midwife increases the
 pains before these obstacles are removed by a change
 in the situation of the foetus or the womb, the more
 she hurts the patient. For this reason, except the
 physician be very sure that the woman in labour is
 quite faint and languid, he should never administer
 cordials; and when he does, it should be in small
 doses frequently reiterated: yet midwives, the wo-
 men in labour, and those that are with them, are
 eager for cordials, and they are offered unknown to
 the physician, or even against his will. I have often
 been thus circumstanced, and I have always chose
 rather to prescribe such cordials as I knew to be in-
 nocent, than obstinately to refuse any remedy of the
 kind. Distilled waters from “ elder-flowers, from
 “ limes, roses, black cherries with the kernels poun-
 “ ded,

^a *Chémie*, Tom. II. pag. 129.

“ded, balm-gentle, the bark of citron and orange-trees,” produce palatable and fragrant cordials, and yet do not increase heat and motion.

Women are never more domineering than at the time of delivery; they insult physicians as ignorant of what relates to their sex: every matron present has some peculiar remedy, which is said to have been for ages together used with success in the greatest families. To reason with people of this stamp would be lost labour. I found it better to shew myself easy, in suffering trifling, and even ridiculous remedies to be applied, so as they were neither dangerous, nor criminally superstitious. I never was against hanging charms, such as the lapis lycis, the lapis aquilæ, &c. to the neck or thighs of the patient; nay, if they would but obey me in other things, I made no objection even to *Helmontius's* remedy^r, which is made of the gall and the liver of an eel dried and reduced to powder; provided it was not taken in wine, but in water or wine diluted with a great quantity of water: *Pharmaco nimirum in stomacho adhuc existente, apertum fit os pubis, & valvæ ossis sacri in lumbis, fœtusque statim propulsus. Notavi scilicet stomachum claves uteri gerere*: “This potion still remaining in the stomach, the os pubis is opened as well as the valves of the os sacrum in the loins, and the foetus is immediately driven out. I have observed that the stomach has as it were a key to the womb.” He trifles afterwards when he advances, that the liver of the eel or water-serpent opens the womb, because the woman was condemned to bear children in sorrow upon the serpent’s account. *Mauriceau*^s shews more sense, when he rather advises to encourage the patient by speaking kindly to her, and to raise her depressed spirits with broth, or a little wine and toasted bread.

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^r In capit. jus duumviratus, pag. 247. No. 46.

^s Traité de malad. des femmes, Liv. 2. chap. 20. pag. 263.

We should likewise take notice, that lying-in women often languish, either because their labour lasts long, or, which is more frequent, on account of their dread of pain, and the doubtful event: whence in those that are weak, hysterical pain often follows, wherefore recourse should be had to uterine or antehysterical remedies. In such faintness and languor it will be sufficient to dilute a few drops of *tincture of amber* or of *castoreum* in the distilled waters recommended above, and give it by spoonfuls, till the patient has recovered some ease.

If a great and sudden weakness should arise, especially if the pains at the same time cease, imminent danger is to be apprehended. “When the strength fails on a sudden, a mortal extravasation is to be dreaded.” Whilst the blood either streams out of the womb, or is poured upon the abdomen, the womb being broken; of which we shall treat hereafter. It is self-evident, that in this unhappy situation, death is accelerated by warm cordials, as they increase the hæmorrhage.

It is customary to imitate by art whatever happens in the course of nature in diseases, if it proves beneficial to the patient: thus the doctrine of things beneficial and hurtful by nature is of great importance in physic. See what has been said upon this subject in § 602.

Hippocrates has observed; *Mulieri uteri strangulatione vexatæ, aut partus difficultate laboranti, sternutatio superveniens bonum*: “That to a woman troubled with a stoppage of the womb, or labouring with a difficulty of delivery, sternutation is beneficial.” It is universally known, that in sternutation the whole body suffers a concussion, that almost all the muscles are agitated by a sudden convulsive motion, that all the bowels are shaken, whence hopes are conceived, that

† Manningham. art. obstetric. compend. pag. 15. “Sect 5. Aphor. 35. Charter. Tom. IX. pag. 215.

that the pains of the woman in labour may be so increased, that delivery may be hastened.

We read of the happy effects of sternutation in a difficult delivery in *Harvey* ^x: A young woman suffered so much in a difficult delivery, that she was seized with fainting fits, and became so stupified and sleepy, that she could not be roused from her lethargy by all the various remedies that were administered; when she could swallow nothing down, he thrust a feather, daub'd with a strong sternutatory, into her nose: though she was stupified to such a degree, that she neither sneezed nor awaked, she began to be agitated by a sudden convulsion of her whole body, which beginning at the shoulders, passed at last to her lower parts. As often as this stimulating remedy was applied, delivery was promoted; and at length, whilst the mother continued oppressed with sleep, a healthy and vigorous child was born. He does not however inform us, whether the patient came afterwards to herself and recovered, or not.

It is obvious from hence, that the nerves being irritated by a sharp sternutatory, the efforts to delivery were happily increased, though no sternutation followed. If the face of a woman in labour should be grim and red, her eyes swelled, and her head very much heated, it is natural to infer from these symptoms that she should lose a large quantity of blood before those violent concussions of sternutation can be safely attempted: for otherwise there would be reason to apprehend a bursting of the vessels of the head, and a mortal apoplexy. Hence *Mauriceau* ^y, whilst he approves of administering sternutatories to women in labour when in convulsions, advises previous bleeding, lest a copious hæmorrhage should be followed by convulsions. Certain it is that sobbing, which *Hippocrates* looks upon as a sort of convulsion, as it
proceeds

^x De generat. animal. pag. 366. ^y Liv. 2. chap. 28. pag. 335.

proceeds equally from repletion and inanition, may be cured by sternutation ^z. This opinion is adopted by *Galen*^a in these words: *Signum itaque bonum est, quia indicat, naturam prius torpentem nunc exsuscitari ac recreari et propriarum motionum reminisci*: “It is therefore a good symptom, because it shews that nature, which before lay torpid, is revived and restored, and recollects it’s former motions.”

S E C T. MCCCXIII.

IF the internal neck of the womb is too narrow or too hard, recourse should be had to external medecines of a middle consistence, between an oil and an ointment; or to fomentations, to render it smooth.

The impediments which have been observed in the parts of generation, when in a bad state, and to which a difficult delivery may be justly ascribed, come now to be considered.

The foetus sticks in the cavity of the womb, from which it should pass by it’s neck and orifice, that delivery may be effected. That neck of the womb is commonly called the internal neck, to distinguish it from the vagina, which is by some, but not very properly, called the external neck. Every body knows that the form of a fig is ascribed to the womb, the widest and highest part of which is called the bottom, the lowest and narrowest the neck. *Eustachius*^b has given us figures of a womb intire and a womb dissected; but such is the figure in women who are not with child: the hollow of the womb appears as it were triangular, wider in the upper part, it converges and grows narrower where the internal neck

^z Sect. 6. Aphor. 13 Charter. tom. 9. pag. 255. ^a In Comment. ad Aphor. 35. Sect. 5. pag. 215. ^b Tabul. 13, 14.

neck begins ; which descending, is again dilated, to the mouth of the womb : but in the womb of a pregnant woman the bottom is distended, and rises more gradually ; but afterwards the neck of the womb begins to be dilated in such a manner, that about the third month of pregnancy, a fourth part of the top of the neck is as much distended as the bottom of the womb. In the fifth month the bottom, increased in magnitude, occupies the middle space, which lies between the summit of the bones of the pubis and the navel ; but at this time half the length of the neck is extended. In the seventh month the bottom touches the navel ; in the eighth month the bottom takes up the space between the navel and the anticardium, or cavity of the breast above the place of the heart. In the ninth month it almost touches the anticardium ; and then the whole neck of the womb is distended^c. Then the neck of the womb disappears, as it were, making one cavity with the bottom, which contains the fœtus, now grown to maturity. If we consider the most exact figure of the womb of a woman, in the fifth month of her pregnancy^d, it is evident that the greatest part of the internal neck of the womb is as it were destroyed by distention : it is however to be remarked, that what remains of the neck appears shorter than it really is, because the orifice of the womb is rendered crooked before that its inward surface may the better lie open to inspection^e. At least it appears from thence, that in the last period of pregnancy, when delivery approaches, there scarce remains any part of the neck, as the whole being dilated, makes one cavity with the bottom. Hence it is, that at that time, in the summit of the vagina, no part of the neck is to be touched by the finger of the physician : the mouth of the womb alone meets it, and that too changed in a fur-

^c Brudenell. Exton. Sect. 3. pag. 117, 118. ^d Noortwyk de utero gravido, pag. 205. ^e Ibid. 206.

a surprising manner. When pregnancy begins, it is found, upon touching, to be closed fast up, oblong, prominent, much like the snout of a dog just born; it afterwards grows thick, and is softened 'till about the sixth month; after which it begins to be diminished in all it's dimensions, in proportion as the womb is more and more distended; so that when delivery approaches, the whole may be levelled, as though it were confounded with the globe of the swelling womb; then there remains only a little circular eminence. In some women, however, in the last months of pregnancy, the orifice of the womb is thicker, and moistened with slimy humours; but then it feels lax and soft, not however firm and compact, as is usual in the first months of pregnancy^f. Therefore not only the womb, but it's neck should be capable of yielding at the time of pregnancy, that the growing foetus may find room enough; for if it should not, abortion is to be apprehended, as was said in the foregoing chapter concerning the diseases of women.

But the orifice of the womb ought likewise to give way and dilate easily at the time of delivery; and though it should be found closed when pregnancy begins, it seems to be opened at last. In the womb of a woman five months gone with child, *Orificium manifestè hiabat, auctum valdè, in ambitu rugosum, glutine quodam tenaci, coloris ex rubro profundè fusci, tanquam thrombo, infarctum: quod utero dein per annum in convenienti spiritu servato, totum dissolutum aperturam reliquit, transverso pollice longam et profundam, latitudinis ubique ferè æqualis, cui facilè quovis loco calamus scriptorium immitteres*: “The orifice gaped visibly, being greatly increased in size, wrinkled in it's circuit, being filled with a sort of tenacious glue of an exceeding yellow colour, which, the womb being for the
“ space

^f Mauriceau Traité de malad. &c. Tom. I. liv. 1. chap 7. pag. 97.

“ space of a year kept in a proper state, totally dissolved, and left an opening of the breadth of one’s thumb in length and depth, of equal breadth every where, and capable of giving admittance to a writing pen in any part &c.”

In the external margin of the above mentioned orifice, there were pores extremely conspicuous, full of the same sort of glue, and little pellucid globes, sunk to a certain depth into the substance of the neck, and turgid with the same sort of matter.

There is therefore in these places every thing necessary to secretion, that the gaping orifice of the womb may be stopped up, and that the parts may be kept soft and slippery, that they may yield and be dilated with ease. But those little bags themselves, if in a diseased and vitiated state, may obstruct delivery: for in a woman who lay in for the first time, and who expired in the pangs of child-bed before she had driven out the fœtus, (see § 486.) the neck of the matrix was found stopped up by a glandulous substance, which stuck to the womb, and “ was bored here and there with small pores.” It has sometimes been observed, that these slimy pits have been quite worn away in women exceeding fruitful. This rendered their latter deliveries extremely difficult and laborious.

It is however remarked, as has been taken notice of above, that a few days before delivery there flows a slimy humour from the vagina, and that the parts of generation are constantly wet; so that the whole womb is lubricated, that the fœtus, which is about to come into the world, may have an easy passage. *Hippocrates*^b, where he enumerates the advantages and disadvantages of those who dwell in cities situated in northern climates, informs us, that they must be of robust and dry constitutions, that they have

§ Noortwyk de utero gravido. p. 7: ^b De Aere, locis & aquis.

have strong and good heads, must be subject to acute inflammatory disorders, and more long lived than other men: but he foretold the women of those countries; *Multæ steriles fiant propter aquas, quæ sunt duræ, crudæ et frigidæ; purgationes enim menstruæ non contingunt idoneæ, sed paucae et parvæ. Deinde difficile pariunt atque valde abortiunt, &c. tabes etiam frequenter à partu contingunt, præ violentia enim ruptiones et vulsuras habent*: “ That many of them should be barren, on account of their fluids, which are rough, crude, and frigid; their monthly evacuations are not favourable, but scanty and vitiated. Add to this, that they are delivered with difficulty, and often miscary, &c. corruption also often follows upon their delivery, and the parts often suffer by being pulled, and bursting in consequence of it’s violence.” For the hardness and dryness of the parts prevent easy delivery.

Hippocrates, in another placeⁱ recommends the following remedies for the removal of these defects; *Si quæ in partu est sicca fuerit, ac ægre humectetur, oleum bibat & locos oleo calido & malvæ aquâ, profundat, & cerato liquido illinat, adipe etiam anserino cum oleo infuso*: “ If a woman during her labour should be dry and hard to be moistened, she should drink oil and pour warm oil and water of mallows upon the parts, she should also daub them with liquid ceratum, and with goose-grease, with an infusion of oil.” Things of this nature have been always applied, when there has been any reason to apprehend difficult delivery, on account of dryness and want of flexibility in the parts of generation. *Mauriceau*^k judiciously advises not to apply these emollients at the time of delivery alone, but a long time before, that a proper degree of softness

ⁱ De mulier. morb. lib. 1. cap. 33. Charter. Tom. VII. page 749.

^k Traité de Malad. des femm. gross. liv. 2. chap. 10. pag. 262. liv. 1. chap. 27. pag. 198.

ness and lubricity may be acquired. Even in a legitimate and natural delivery, he advises midwives to anoint the parts of generation with emollient oil, the grease of an axle-tree, or fresh butter, if they observe them to dilate with difficulty ^l. He has however added this caution ^m, that recourse should not be had too often to these anointings at the time of delivery, lest the slimy humours which humect and lubricate the parts should be thereby rubbed off; for he judiciously observes, that these are of greater service than any application whatever. When I once apprehended difficult delivery in an old woman who lay in for the first time, I ordered her parts of generation to be twice every day exposed to a 'vaporous bath, and then anointed with fresh oil of almonds, with a decoction of the roots of marsh-mallows shaken a long time; for by so doing I obtained an emollient and lubricating unction, having followed the advice of *Hippocrates*. I had recourse to this method a fortnight before delivery, and that with success.

These are the remedies that may be safely applied, for it is dangerous to have recourse to force, to dilate the two narrow and refractory parts, for there generally follows a mortal inflammation of these parts, attended with an acute fever.

Add to this, that the parts which were before too narrow, are sometimes dilated, contrary to all expectation. I have often known midwives by the touch find the mouth of the womb hard and closed up, though some of the pains of delivery were come upon the patient; whereupon they left them, and went to others who seemed to have immediate occasion for their assistance. In less than an hour after, the orifice of the womb became soft and open, easily yielded, and a happy delivery followed, before the mid-
I
wife

^l Ibid. chap. 4. pag. 239.

^m Ibid. chap. 7. pag. 245.

wife could return to assist at it. *La Motte* was surprised ⁿ that he could not draw a foetus, six months old, out by the feet, as he could no way get the hard orifice of the womb to yield, he in vain had recourse to oils and other fat unctuous applications. He went away in order to prepare a vaporous bath of emollient herbs; when he returned he found the mouth of the womb soft, and so well disposed to yield, that he could draw out the foetus with the greatest ease imaginable, and with such success, that six days after the patient walked the streets in good health, and took no notice of what had befallen her. He however candidly confesses that he would have ascribed the relaxation of the mouth of the womb to the vaporous bath, if it had followed upon the patient's making use of it. It was on the contrary, the work of nature alone. We meet with an extraordinary case of a woman with child ^o, whose vagina was so tight that a writing pen could hardly enter it; yet whilst the pangs of delivery grew upon her, the vagina was so much dilated in the space of three hours, that she was delivered of a strong, robust child. It may be reasonably concluded from this instance, that we should not too easily despair even in the most difficult cases.

It would have been more prudent however to have given attention to the dilatation of the vagina at the time of pregnancy; this subject shall be farther treated of in sect. 1315. Nature often relieves herself, but as this does not always happen, it is necessary to have recourse to the assistance of art.

ⁿ Traite des Accouch. liv. 3, chap. 7, pag. 291.

^o Academ. de scienc. in, 4to. l'an 1748, hist. pag. 58.

S E C T. MCCCXIV.

IF a tumour grown either here (1313) or in the vagina, should obstruct the forcing out of the fœtus, it should be dispelled, brought to suppuration, or removed by a surgical operation.

As natural birth is not to be brought about without a strong effort of the woman in labour, even when all the passages through which the infant about to be born is to pass, are free from obstruction, it is self-evident that any tumour which grows about the mouth of the womb, or in the vagina, must obstruct the exclusion of the fœtus; wherefore cure consists entirely in the removal of such a tumour. Various different obstacles to delivery have been discovered, which shall now be treated of. It is generally known that the womb is placed between the bladder and the rectum intestinum or last gut, wherefore whatever causes these parts placed with the womb in the pelvis to swell, must obstruct the easy exclusion of the fœtus. It was observed in sect. 1302, where the inconveniences arising from the growth of the fœtus, are enumerated that difficulty of evacuating by urine and stool are frequent in women with child. Wherefore excrements accumulated in the larger intestines, chiefly the rectum, as also a bladder distended with urine, have been reckoned amongst the obstacles of easy delivery ^p. Therefore towards the conclusion of the time of pregnancy, a gentle clyster should be given in case the patient should be costive. When first the pains of delivery begin, a clyster is highly serviceable, that the rectum intestinum may be thoroughly evacuated; for if this be deferred too long, till the head of the child descends lower, the rectum

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^p Mauriceau traite des malad. &c. liv. 2. chap. 10. pag. 260.

is then compressed in such a manner that a clyster cannot easily be given, nor can the excrements easily come out. Clysters have another advantage, the pains of delivery are hastened by the efforts which the lying-in woman makes at stool⁹. For the same reason women in labour are advised to make strong efforts to discharge their urine; though generally when stool is promoted by a clyster, urine is discharged at the same time. We have shewn in sect. 1302, how a pregnant woman should be assisted when she discharges her urine with difficulty, or when it is totally suppressed; where we have likewise treated of hemorrhoids, which sometimes give women in labour great trouble, and render the last efforts of delivery very painful, nay even sometimes by excessive anguish, renders the patient unable to exert her whole strength, in order to force out the foetus.

But particular care should be taken lest the bladder should be distended with urine; for there is great danger that the bladder may be so injured as to give occasion to a troublesome involuntary discharge of urine; nay it has sometimes been observed, that the bladder being full of urine, has been broken by the violent efforts of a woman in labour; this has given rise to dreadful disorders, to disorders which scarce admitted of a cure. After a very difficult delivery, the woman's urine run from her when she walked upright, without any concurrence of her will, with a sense of burning heat and an ill smell. Upon a careful examination, it appeared, that the lower part of the bladder was broken towards the sides, and that the lips of the broken place were covered with a sort of hard flesh. But as a portion of the urine had been collected in the bag full of little holes, being made sharper by its stay there, it eat out the adjacent parts; whence an ulceration followed, and purulent urine was constantly discharged¹. Nay, though the bladder

⁹ Ibid. chap. 4. pag. 238.

¹ Stalp. vander wiel observat. &c. cent. 1. observ. 82. pag. 351.

der should not be burst, it may if it should happen to be very full, during the efforts to delivery, be so lengthened, where the adjacent parts make but little resistance, that a hernia or rupture of the womb may follow, a dangerous disorder which has sometimes been observed in pregnant women when in the last month of their pregnancy, the head of the infant presses the bottom of the bladder, which is then on both sides distended as it were into the extremities, which end at the abdominal rings; sometimes the bladder being stretched, descends between the vagina and the rectum, and in the perinæum or seam between the privy parts, and the fundament causes a hernious tumour, which being compressed, goes off when the urine is evacuated, and returns when the urine is retained. We read of many such cases^s. It is obvious that if a hernia of the bladder should advance between the vagina and the rectum, such a tumour by compressing the vagina, might make its cavity narrow, as has been observed before. *Ruijsch* ^t observed in a woman in labour a hard tumour, occasioned by the violent efforts which she made, it was not quite of the bigness of a man's fist, it was formed in the right side of the privy parts. He acknowledges that he at first had like to have been deceived, thinking it was a portion of the placenta, which sometimes endeavours to come out before the fœtus. *Re autem penitus investigata, veram uteri lateralem portionem esse deprehendit: Quod eventus quoque edocuit: Fœtus enim in lucem edito, statim ad naturalem rediit locum, patiensque convaleuit sine ullâ ulteriori fomentatione, quâ usi sumus in partu ne pars uteri prolapsa gangrænam conciperit:* " But having more carefully examined " the matter, he found that it was in reality a por- " tion of one of the womb's sides: This conjecture " was confirmed by the event; for the fœtus being

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" disengaged

^s Academ. de scienc. l'an 1717, hist. pag. 19. Academ. de chirurg. Tom. II. pag. 23 & seq. ^t Observat. anat. chir. obs. 24, pag. 23.

“ disengaged from the womb, it immediately re-
 “ turned to its proper place, and the patient reco-
 “ vered without the application of any fomentation,
 “ which we use at delivery, lest the fallen part of
 “ the womb should be seized with a gangrene.” But
 it is easy to conceive, that if the orifice of the womb
 does not answer exactly to the cavity of the vagina
 (which subject we shall treat of hereafter) that in such
 a case the lower and lateral part of the womb may be
 extended into such a tumour.

The falling of the vagina may likewise be consid-
 ered as an obstruction of delivery, and this happens
 much in the same manner with the falling of the rec-
 tum. For it's inward coat, being become more lax, is
 insensibly turned in upon itself, as it were, and juts out
 beyond the privy parts in the form of a sort of a tur-
 gid ring unequally folded, in the middle of which
 there is an opening which easily admits the finger ^u;
 with which the orifice of the womb may generally be
 touched as it then usually descends lower than usual.
 Thus the falling of the vagina appears when it is re-
 cent; it is very different if the evil is of long stand-
 ing, the vessels being stuffed up and very much
 spoiled; wherefore this disorder has often been mis-
 taken by the unskilful or inattentive for the falling of
 the womb. If the falling of the vagina be rightly
 treated at first, it is easily remedied, and the cure is
 compleated by the repose of a bed and astringent fo-
 mentations ^x. When it comes to be of a long stand-
 ing, it is altogether incurable. If a falling of the
 womb should happen before delivery, remedies should
 immediately be applied, lest when the head of the
 foetus descends in delivery, the interior coat of the
 vagina should be pushed too far forward. *Van De-*
venter ^y advises, that if such an untoward accident
 should happen to a woman in labour, the midwife,

Protinus

^u Academ. de chirurg. Tom. III. pag. 390.
 traite des accouch. liv. 3. chap. 11. pag. 657.
 obstetric. cap. 30. pag. 134, 135.

^x La Motte
^y Nov. lum.

Protinus omni studio prolapsam vaginam loco suo restituat, deinde maximopere curam gerat, ne os uteri nimis permittat delabi, sed illud supra in vagina retineat et quod fieri potest, manibus sustentatum servet, usque dum parturiens tam fœtum quam secundinam enixa fuerit: “ Should do her utmost to restore the falling
 “ vagina to its place, and then likewise should take
 “ particular care not to let the mouth of the womb
 “ slip down too far, but keep it up in the vagina,
 “ and support it with her hands as well as she can,
 “ till the woman in labour has disengaged herself
 “ both from the fœtus and the placenta or secundine.” He then directs that the fallen vagina should be restored to its place, and a proper remedy applied in order to its cure. At the same time, caution is required, lest other swellings of the parts of generation should be mistaken for the falling of the vagina²; for after frequent and laborious deliveries, the vagina is so torn, that, having lost its strength, it is afterwards less capable of resisting the rectum swelled by gathered excrements, or the bladder filled with urine; and then there often appears in the vagina a tumour, which juts out beyond the lips of the pudendum. Thus I have seen a woman, who after she had been twelve times happily brought to bed, when she went to stool, voided her excrements before, for they distended her too lax vagina, and could not be forced out at the anus; wherefore as soon as the hard excrements were to be forced out, she should by thrusting her finger in her privy parts, have kept them back till the anus could be opened.

Hence we may judge how much skill and prudence are required, how perfect a knowledge of the parts is necessary to render a physician serviceable to lying-in women.

A delivery may be rendered laborious by the swelling of the lips of the privy members, though such

D 3

swellings

² Acad. de chirug. Tom. 3. pag. 392, 393.

swellings are not by the skilful looked upon as very dangerous, if they are cold and occasioned by white phlegm; upon which subject, see what has been said in sect. 1301.

We have hitherto spoken of the swelling of the parts adjacent, by which the coming out of the mature foetus may be delayed. But tumours of every kind like those, which are observed in other parts of the body, may grow either in the orifice of the womb or near it, or in the vagina itself. It is self-evident that all these obstacles ought to be removed before delivery is near at hand, if that can possibly be effected. Nay it may happen that the parts long pressed by the foetus, may swell and be inflamed at the very time of bringing forth; and then a cooling prescription is necessary, and above all bleeding, that the vessels may be emptied. This is the advice of *Hippocrates*^a. *Quod si pregnant diuturno tempore immoretur, & parere nequeat sed pluribus diebus partus doloribus discrutietur, sit autem juvenis & ætate florens, multoque sanguine redundet, venas in malleolis secare oportet, & virium habita ratione sanguinem detrabere.* “If a woman with child should be tardy in bringing forth, if she should not be delivered with ease, but should be long tormented with the pangs of labour, especially if she should be young, of a florid constitution, and full of blood, she should be bled in the foot, and the loss of blood should be proportioned to her strength.” But if an inflammatory tumour, occasioned by any other cause, should at the time of pregnancy seize upon these parts, all the succour of art should be used in order to dispel it; and if that cannot be effected, suppuration should be promoted, that the passages may be rendered entirely free before delivery.

In these parts tumours have been often observed resembling little bags or polypusses, bearing a strong resemblance

^a De mulier. morb. lib. 1. cap. 77. charter. Tom. VII. pag. 776.

resemblance to the polypusses of the nose, and sometimes of such a magnitude, that they would render delivery impossible, if not removed by the surgeon's hand.

A girl had for many years together a tumour in her vagina, which by some midwives was taken for a falling of the vagina, and which in process of time increased considerably; it happened that as she returned home one day, she felt a tumour fall from her pudenda with great violence and excessive pain to her; taking it to be the womb, she in a fright sent for the celebrated surgeon *Benevoli*^b, who found a tumour ten fingers breadth in length, and about as much in circumference. That skilful surgeon soon perceived that it was not a falling down of the womb; he was however dubious what means he should use to cure so bad a disorder; he endeavoured to reduce the tumour to the vagina, but was not able; whence he concluded that the only remedy was to destroy it, and this the patient bravely required, that an end might be put to her sufferings. The neck to which the swelling of the vagina stuck, was of about twice the thickness of a man's thumb. Having called another skilful surgeon to his aid, he bound the neck of the tumour with a strong and thick cord to compress it powerfully, but without danger of a rent; as soon as ever the cord was pulled tight, he saw that the membranes were cut by it, wherefore he left off pulling it, watching whether a hæmorrhage would follow; seeing that did not happen, he boldly continued to pull the cord, and the whole tumour was separated from its cohesion with the vagina, nor did a very considerable hæmorrhage follow: As soon as a sufficient quantity of blood had flowed from it, he filled with strings of tow the cavity from which the tumour was separated, and dressed it properly. The tumour weighed twenty-two ounces, consisting of a slimy substance, covered

D 4

with

^b Dissertationi, &c. observ. 6. pag. 101. & seq.

with a thin but strong membrane. In a few days this girl's cure was compleated, a decoction of barley being applied, with a mixture of honey and roses, wine and myrrh. He at the same time gives us to understand, that swellings of this nature might have misled those who are of opinion that the wombs of some women have been destroyed, and that they have been delivered notwithstanding.

Denys ^c removed a tumour of the same nature, but of smaller size, by making a ligature about the neck of the tumour: it grew in a virgin of twenty-two years of age, and was ulcerated before he undertook the cure; upon the fourth day after making the ligature, he cut off the tumour, which being become putrid, diffused a very bad smell. A compleat cure followed upon this occasion likewise. He with the same success by a ligature, took off a hard fleshy tumour, which no where adhered to the vagina, but hung from the left side of the womb's mouth. It is certain that such tumours grow not only in the vagina, but in the womb itself, and that being lengthened out, they pass through the orifice of the womb and hang in the vagina. Such tumours often give rise to an obstinate hæmorrhage, which ceases after a ligature is made. Sometimes being come out through the orifice of the womb, they are choaked by it and fall. The excellent *Levret* ^d deserves to be consulted upon this subject: he understood it perfectly, and invented very curious instruments, by the means of which, the neck of such a tumour might be bound, whilst it sticks to some high place. Equally worthy of attention are the observations which the same author makes in another place ^e upon the polypusses of the womb and the vagina. But as the instruments for binding the polypus, which he has given us a description of, would put the operator to some

^c Over het. ampt. der vroedmeesters, &c. pag. 10, 11.

^d Observat. sur les polyp. pag. 99, & seq. & per totum.

^e Mem. de l'acad. de Chirurg. Tom. III. pag. 518, & seq.

some trouble, he has described another more simple ^f, which by the means of a silver wire, can bind the neck of the polypous tumour in any manner that the chirurgeon thinks proper. *Denys* ^g made use of some such instrument to bind the tumour hanging from the orifice of the womb; but he used a wax thread instead of a silver wire, though the latter is much more convenient. But when the patient left town, as soon as the ligature was applied, he charged her to bind it harder and harder, by twisting it till the tumour fell; this advice was crowned with success.

Perhaps he might have thought that such tumours, especially if they had taken root in the womb itself, might obstruct conception. But a sufficient number of examples proved the contrary: We hear of many cases, and those very extraordinary ^h, which evince that the due growth of the fœtus is not always obstructed by such tumours, much less conception.

The track of those tumours which are found hanging from those parts, seems to be marked out by *Hippocrates* ⁱ. Thus he expresses himself: *Si in pudendis gravis odor sit & columella innascatur dolorque detineat, dolorem quidem sedabit apii semen ex vino jejunæ datum, gravem autem odorem anisum eodem modo adhibitum et columellam præcidere oportet*: “ If there
 “ should be a bad smell in the pudenda, and a
 “ tumour should grow, and the pain of it should
 “ be severe, the seed of parsley will allay the
 “ pain, being administered in wine to the patient
 “ fasting; the bad smell will be dispelled by anni-
 “ seed given in the same manner.” The tumour must be cut off. In a manuscript in the Vatican ^k, there is a reading which seems preferable to the
 above;

^f Mem. de l'acad. de Chirurg. Tom. III. pag. 578.

^g Over. het. ampt. der vroedmeesters, &c. pag. 11.

^h Academ. de Chirurg. Tom. III. pag. 543, & seq.

ⁱ De natura muliebri, cap. 66. charter. Tom. VII. pag. 715.

^k Ibid. pag. 900. No. 197.

above; for there, instead of *κίων Columella*, we read *καστοπος καστοπίς*. Certain it is, that the castoreum of the shops may very properly be compared to such a tumour, both on account of its stink and its figure.

S E C T. MCCCXV.

IF the excoriated lips of these parts should close quickly, and before delivery, they should, if possible, be cut asunder, and covered over with a scar.

That delivery may be prosperous, the foetus should pass through the mouth of the womb, through the whole length of the vagina and through the external orifice of the vagina; so that each of these three places are liable to obstruction.

Certain it is that the excoriated and crude sides of these parts may grow together, from what cause soever this may proceed; nor is it impossible that the same thing may happen in the orifice of the womb. It has appeared from faithful observations, that women have conceived whilst the vagina was closed; it is not yet known whether a woman could conceive, the orifice of the womb itself being obstructed and stopped up. It is true indeed, the mouth of the womb may be closed after the woman is impregnated; which a physician may apprehend if venereal ulcers, or ulcers proceeding from any other cause, should eat into these parts; but it does not seem easy to form a judgment of this by the touch before delivery.

True it is, that in women with child, the mouth of the womb which was before pointed, fleshy, and solid, in the space of two or three months, becomes level, thin and soft, so that two or three months before delivery, the mouth of the womb gapes open¹.

But

¹ Deventer. nov. lum. obstetric. cap. 16. pag. 55.

But the same author, in the following page, with great good sense informs us, *Quod hæc omnia sensu moderato sint intelligenda, utpote exceptionem facile admittentia*: “ That all these particulars should “ be understood with some allowance, and as admitting of frequent exceptions.” For in women who are brought to bed for the first time, when they are robust and advanced in years, the mouth of the womb sometimes continues shut to the last, nor is it opened till the increasing pangs force it open. He observed that the same thing happens when the situation of the child is disadvantageous.

Besides it is observed ^m, that pregnant women sometimes suffer pains, called by the midwives spurious, which wander up and down the abdomen, and do not, like the true pains, spring from the loins, and advance through the sides of the abdomen to the os pubis; whilst the woman who lies in suffers spurious pains, the mouth of the womb is contracted, for which reason an unskilful person might imagine that the orifice of the womb is going to be stopped up, especially as those spurious pains sometimes precede the genuine pains, and sometimes accompany them. *Moschion* ⁿ seems to have well distinguished these pains from the true pains; for after having with great judgment enumerated all the symptoms of approaching delivery, he observes, *Et quod fervoris dolor cum clausura & siccitate in orificio invenitur*: “ That a painful sense of heat is felt in the “ orifice, together with a stoppage and dryness.” Whereas by the true pains, the orifice is dilated and moistened. Whence it is evident that great skill and prudence are required, in order to determine whether the mouth of the womb is really stopped up, as this but seldom happens, and perhaps never, except after pregnancy. Inflammation, suppuration, and venereal injuries, may be reckoned among the causes of this disorder.

^m Ibid. cap. 17. pag. 60.

ⁿ Spach gynæc. pag. 4. No. 45.

disorder. But *Hippocrates* has observed^o, that burning ulcers sometimes infest the pudenda of women ; concerning these, see what has been said in sect. 978. Upon another occasion I made mention in sect. 486, of the case of a woman, the orifice of whose womb was stopped up ; in her fortieth year she was brought to bed for the first time ; and as the distance between the os sacrum and the bones of the pubis was too inconsiderable, she was with great difficulty delivered of a dead child, after having suffered severely for four days together ; she recovered after this painful lying-in, and becoming pregnant again three months after, delivery came on at the proper time, and though she for two days together suffered cruel pangs, the orifice of the womb never once gave way. A man-widwife who attended her, found that the mouth of the womb was closed, and that there was not the least trace of an opening. In the first delivery, which had been so very difficult, the orifice of the womb had suffered great violence, and there followed a suppuration sufficiently considerable and lasting, which however the by-standers ascribed to the external parts, however torn. It seems highly probable that the internal parts suppurated, and that after suppuration, the orifice of the womb was stopped up, so that the woman remained susceptible of being impregnated, but unable to force out the foetus. The vagina being dilated by such instruments as offered, because proper ones could not be had, the scar of the stopped mouth of the womb appeared, and it was found necessary to force a penknife in, to the depth of half a thumb's breadth, in order to divide the closed mouth of the womb : The head of the foetus was touched by the finger, but the whole circuit was of a cartilaginous hardness, nor did it give way to the utmost efforts of the unhappy wretch ; wherefore the whole circuit was divided by various incisions, and then began to dilate by degrees, but not sufficiently : Then the

man-

^o De natur. mulieb. cap. 61. charter. Tom. VII. pag. 714.

man-midwife was obliged to draw out the fœtus with his hand, as he had done the time before.

Whilst the cartilaginous orifice of the womb was divided by so many incisions, a drop of blood did not flow from it; nor did the patient feel any pain, complaining of nothing but the uneasy dilatation of the vagina. As soon as she was put to bed after delivery, she was seized with a pluretic pain, with a violent fever, and with difficult respiration; and having suffered so much that she was able to bear no longer, she died in twenty-four hours ^P. This extraordinary case shews us, that after inflammation and suppuration, the mouth of the womb was closed with a hard cartilaginous scar; but that this injury did not appear plainly till the time of delivery. If there was any reason to apprehend such an accident, might not abortion be justly feared, as well as a dangerous hæmorrhage of the womb, whilst there is a necessity of dilating the vagina by force, of opening the closed mouth of the womb by cutting, and of afterwards preventing the parts divided by the pen-knife from joining each other again. It was observed before in Sect. 1306. that there is reason to fear abortion from slight causes.

The reader may likewise have recourse to what has been said in Sect. 1290. of the stopping up of the womb by a membrane and other causes, when the monthly evacuations are obstructed; but then it was likewise remarked that such women are barren.

It is easier to discover and to cure the growing together of the vagina, and the orifice of the pudenda; which subject was likewise treated of in Sect. 1290. where occurs the extraordinary case of a woman, who being married in the sixteenth year of her age, had a vagina so narrow that a pen could hardly enter it; yet this woman became pregnant, after having been married eleven years; and in the fifth month of her
preg-

^P Medic. essays and observat. Tom. III. No 19. pag. 315, et seq.

pregnancy the vagina was so much dilated, that she was happily delivered. Mention was likewise made in the same place, of the several methods by which this disorder may be cured. If the membrane that incloses the vagina ought to be cut, or the parts which are grown together ought to be separated, it is self-evident that this should be attempted before delivery, so that the cure may be compleated before the woman is going to bring forth: for this being done too late, may give rise to ill consequences, as appears from the following observation.

When a woman who lay in for the first time was upon the point of bringing forth, the midwife upon examination found, that the vagina was very much straitened, and close bound in the midst of its length. The surgeon being called, found that the midwife had spoke the truth; but with the end of his finger he touched a little hole, which *Benevoli*, being likewise called upon in this perplexing case, dilated with his finger, after which an instrument could be easily introduced to dilate it still more. The head of the foetus could then be touched; but there was a thin membrane there likewise, to which he fixed a hook, and in that manner removed it from the head of the child, pulling it whilst another cut it with a pair of scissars; but as the opening seemed still to be too small for the head of the foetus to pass through it, he put in his hand and widened it, and tore this membrane in such a manner, that the head of the foetus might be entirely uncovered: in three hours time she was delivered of a live girl. The lying-in woman was well till the fifth day after her delivery; then there followed a fever with a violent cold fit; the abdomen swelled; there came on a vomiting, a copious sweating, and a severe pain of the vagina, together with a copious eruption of matter, purulent, slimy, and stained with blood: after several weeks the pain was in some measure diminished by all the assistance that art could afford. The vagina however could

could not be covered over with an ulcerous scar in less than six months after. The cure was however happy and compleat, and she was delivered several times after. When afterwards the mother of this woman was asked, whether her daughter had ever been troubled with a swelling, or any other disorder, in the parts of generation, she peremptorily denied it; at last she recollected, that when her daughter in her childhood rode upon a stick with other girls of the same age, she fell; and striking her privy parts against one of the knots of the stick, was so much hurt, that she was under the care of a surgeon for above a month afterwards: so that it seems probable that her illness derived it's origin from thence. Certain it is, that if this had been known, the obstruction had been more safely removed after delivery; for delivery following soon after, so hurts the torn vagina, that inflammation and suppuration cannot afterwards be avoided.

After a very laborious delivery, the vagina is often inflamed, and suppurates; nay, it is sometimes seized with a gangrene: if a cure should follow, the sides of the vagina may if great care is not taken, grow together, or be so straightened by the hard and contracted scars, that it would prove a very hard matter to dilate it at another delivery. We meet with many such cases in medical history ⁹.

S E C T. MCCCXVI.

IF the close joining of the bones prevents passage, they should be softened by emollient ointments, (1313.) of the nature of fomentations and the woman in labour should be assisted with the hand, according to the method of the art of delivery.

Deliveries are rendered more difficult by this cause than any other ; and as it scarce admits of a cure, it is not without reason that midwives are terrified by nothing so much as by a bad conformation of the bones that form the cavity of the pelvis.

The bones of the pelvis, though they are in girls just born composed of fifteen distinct bones, are in a riper age so united, that in a marriageable virgin the pelvis consists of only four bones, the os sacrum, the os coccygis, and two bones that have no name : each of these last are by anatomists distinguished into three parts, which are known by different names : for the fore part of the bone without a name is called the os pubis, the superior and hindmost part is called the os ilium ; the inferior and lateral part is called the os ischion.

These bones joined together, form the cavity of the pelvis ; and at that part which looks towards the cavity of the pelvis, they are smooth. The hindmost hollow of the pelvis forms the os sacrum ; that which is above it, and broader, by degrees becomes narrower ; and the os coccygis is joined to it's lowest and narrowest part : the bones of the ilium form the superior and lateral part of the pelvis ; the bones of the ischion the lateral and inferior part, and the bones of the pubis the fore part. By the name pelvis therefore is understood that space which is comprehended by these four bones united together.

It is usual at the same time to consider the entrance into the cavity of the pelvis, and the passage that leads from it. The last vertebræ of the loins jutting out before in this place, together with the last part of the os sacrum, form the hind part of the entrance. On both sides it is formed by the middle part of both bones of the ilium ; the fore part of the entrance is formed by the extremity of the bones of the pubis. The hindmost passage from the pelvis is formed by the os coccygis, on the side by the inferior border of each bone of the ischium ; the fore
part

part is formed by the inferior curvature of the bones of the pubis.

Upon the perfect structure of the pelvis the happy delivery generally depends; for if the passage be too narrow, it is self-evident that the foetus cannot be forced through without great difficulty: nay, this is sometimes altogether impossible. But though it may at first appear extraordinary, even the too great breadth of the pelvis may do hurt, if the midwife does not take great care. For, that a delivery may be denominated happy, the foetus should, by the efforts of the mother, be forced through the orifice of the womb gradually dilated; and the womb ought to be so supported, that there may not be a possibility of it's falling at the same time: for if the entrance of the pelvis should be too wide, the womb will descend with the foetus, the orifice of the womb being hardly open, as it is not sufficiently stimulated by the pains of delivery, unless the womb is sustained by a proper narrowness in the pelvis. *Deventer*^r, taught by reiterated experience that such things happen, advises midwives to examine the size of the pelvis when they are sent for to women in labour, and not to be too confident, let appearances be ever so favourable, for a falling of the womb is to be apprehended. This mischief is prevented, if the midwife with her hand holds the womb descending with the foetus, lest it should hang out of the pudenda. Thus by the contrivance of art he affords the womb that prop, which the too great size of the pelvis refused. *Ruijsch*^s had seen cases of the like nature, and makes the following observations upon them; *Mirum dictu quantâ monstrositate sese offerat eo tempore dictum uterius, & quanta circumspeditione opus sit in tali partu, norunt ii, qui hisce nobiscum adfuernnt casibus. In hoc statu foetus adhuc viventis exitum naturæ committendum existimo & os uteri utraq; manu retinendum:* “ It is

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E

“ wonder-

^r Nov lum. obst. trile cap. 27 pag 114.

^s Observat. anatom. chirurg. pag 25.

“ wonderful to tell what a strange appearance the
 “ mouth of the womb makes at that time; and
 “ how much caution there is need of in such a de-
 “ livery, is known to those who were with us, and
 “ were in person witnesses of these cases. The com-
 “ ing out of the foetus, when thus circumstanced,
 “ should, I think, be left to nature, and the mouth
 “ of the womb should be held with both hands.”
 Nor did he fear the falling of the womb alone; he
 was likewise apprehensive of it's inversion.

Levret ^t has remarked, that when the entrance of
 the pelvis is of the larger size, the passage that leads
 from it is generally rather narrow; and that on the
 other hand, if the entrance of the pelvis is narrow,
 the passage that leads from it is broader than usual.
 In the first case, matters are conducted expeditiously
 at the beginning of delivery, but it is retarded to-
 wards the latter end; for then there is less reason to
 fear lest the womb should fall, and the midwife can
 assist the woman with child, by gently keeping in
 the os coccygis, which being crooked before, sustains
 the head of the child, and directs forward towards
 the inferior curvature or border of the bones of the
 pubis, where there is a wider space to favour the com-
 ing out of the child. It is known, however, that
 the os coccygis can give way when it is in it's natu-
 ral state, as we are informed by *Levret* ^u, where we
 meet with many curious observations concerning the
 structure of the cavity of the pelvis: but if the en-
 trance of the pelvis incline to the narrow, the passage
 from it is generally somewhat large, and then deli-
 very at first goes on but very slowly; but when the
 foetus goes beyond this narrow pass, it often comes
 out headlong, because the opening widens. It some-
 times happens likewise that the pelvis is too wide,
 not only in it's entrance and the passage out of it, but
 in it's whole extent; and then the whole womb, to-
 gether with the mature foetus contained in it, might
 roll

^t L'art des accouch. pag. 7.

^u Ibid. pag. 6.

roll from the pudenda, if not prevented by a skilful hand *. Hence it appears that the too great magnitude of the pelvis may have bad consequences, but the midwife's art is at hand to obviate them. The difficulty is much greater if the pelvis should happen to be too narrow; this sometimes renders delivery absolutely impossible. It is true indeed, the too great magnitude of the foetus may render delivery difficult, nay impossible; but we are at present treating of deliveries, difficult on account of some defect in the mother.

The sign of the pelvis's being so narrow, that the mature foetus cannot pass through it, is y it's not being able to admit the man-midwife's hand, let it be ever so little. It is universally known that there is a great difference between the hands of different men, with regard to their different size and fleshyness. Those are allowed to be of all others best calculated for the man-midwife's office, who, with strong muscles, have narrow hands and long fingers: if therefore the pelvis is unable to admit such a hand, the birth of the mature foetus is looked upon as impossible, and the only remedy left is the Cæsarean operation, which shall be treated of hereafter.

The bones of the pelvis are obnoxious to all the same diseases, to which the other bones of the body are liable; insomuch that the exostoses, or juttings of the bones out of their proper places, which happen here, may make the cavity of the pelvis narrow^z. It has even been observed, that the extremity of the thigh being moved out of the pan of it's joint into the oval aperture, has rendered delivery impossible 'till it has been replaced. It is known to a certainty, that the last vertebræ of the loins jutting out too far inwardly, have totally prevented delivery, though the structure of the pelvis was unexceptionable.

E 2

Now

* L'art des accouch. pag. 7, 8.

y Ibid. pag. 9.

z Crantz de utero rupto, pag. 28.

Now as the rickets alter and discompose so many bones of the body, all who have written upon the art of midwifery agree, that difficult delivery is to be apprehended in those who have been troubled with that disorder when young: for such as have suffered it have often a hump-back, a distorted back-bone, or a lameness, during the remainder of their lives. An excellent author ^a has admirably described these disorders, and has remarked, that the structure of the pelvis is not always vitious, though the back-bone should be distorted. For if the distortion of the back-bone should not be occasioned by rickets in childhood, but should happen later, in the twelfth or fourteenth year, and proceed from some other cause, the pelvis is then compleatly formed, and its structure may be good, though the rest of the body should be rendered deformed by the back-bone's being distorted. Perhaps these are the cases in which midwives are surprized that deformed women are not delivered with more difficulty than others, whose shape is unexceptionable. It is however to be remarked that let the pelvis be ever so well conditioned, if the distortion of the back-bone should render the cavity of the breast narrow, hump-back'd women bring forth with more difficulty than others; because on account of difficulty of breathing, they cannot exert themselves in strong efforts to promote delivery.

But as the bones in rickety children are soft and flexible, and they are unable to walk like children in health, they remain forever in a chair, or sitting in their nurse's lap; whence the fore part of the coccyx is pressed towards the cavity of the pelvis, the inferior extremity of the os sacrum juts out; the highest part of the same bone, with the last vertebra of the loins, comes out before, and approaches the summit of the os pubis; so that in some women the distance between the os sacrum and outermost border of the bones of the pubis has been found not to exceed

^a Brudenell. Exton. of midwifery, Sect. 4. pag. 82.

exceed three times the breadth of the thumb in extent; in some not twice the breadth of the thumb; in some, but that seldom happens, not one breadth of a thumb and a half. In others, on account of the same disorders, the last vertebra of the loins, with the last part of the os sacrum, points inwardly; but towards the side the bones of the pubis, which should have outwardly a convex, inwardly a concave surface, are levelled, nay, they sometimes become convex towards the innermost parts: moreover, the lower part of each bone of the ischium declines towards the cavity of the pelvis, and the distance between the extremities of these bones, which is generally equal to three breadths of a thumb and a quarter, is diminished. But the commonest defect proceeding from this cause, is a protuberance of the last vertebra of the loins and the summit of the os sacrum, which causes the head of the foetus often to stop motionless in the entrance of the pelvis, on account of it's deformity. The fear of difficult delivery is the greater in those who have been troubled with the rickets in their childhood; because though they are cured, and though their shape becomes unexceptionable, there still remains some deformity about the pelvis. It is for this reason that the most experienced midwives always dread a difficult delivery in such a case.

If therefore the close connection of the bones should prevent the coming out of the foetus, it may be reasonably inquired what assistance is in such a case afforded by art. All the softest unctions, fomentations, and vapours, are here recommended: all these are of service, especially if the parts should be too hard and dry, as was observed in Sect. 1313. but there is little room to hope that the bones will by these means quickly soften and give way: these remedies may however be tried with safety.

But when the bones which form the cavity of the pelvis have for a long time stuck together, by means

of the intervening cartilages, which begin to ossify as age ripens, those skilled in midwifery have made it a question, whether these bones can separate at the time of delivery, so as to increase the cavity of the pelvis. *Eustachius* ^b has taken notice of a thick gristle that connects the bones of the pubis. The same juncture of the bones of the pubis is externally covered with a considerable number of ligamentous and aponeurotic fibres, which are strong; in like manner the junctures of the os sacrum, with the bones of the ilium, are every where covered with different planes of aponeurotic fibres; which are very dense, and extremely elastic ^c. Hence it appears that the parts in this place are so organized, as to yield upon any occasion, but that they can by their elasticity restore themselves to their first position, as soon as the force that acted upon them is removed.

It is universally allowed that the os coccygis can give way; and if it was not able to retire backwards, whilst the head of the child sticks in the passage out of the pelvis, it is evident that the delivery must prove very difficult. But *Mauriceau* ^d denies that the bones of the pubis can be disjoined, because at the *Hotel Dieu*, a great hospital at *Paris*, he saw women immediately after delivery walk to their bed, which was at a considerable distance from them; which they would be unable to do, if the bones of the pubis were separated from each other, or if the bones of the ilium were separated from the os sacrum. He adds, that having inspected the dissected bodies of many lying-in women, he never saw such a separation of the bones. It seems probable, that in a natural and tolerable easy delivery, though the juncture of the bones of the pelvis may in some measure yield, a compleat separation of these bones is not made. But it cannot at any rate be denied, that
in

^b Tabul. 43.

^c Levret l'art des accouch. pag. 3.

^d Liv. 2. chap. 1. pag. 210.

in a difficult delivery the bones of the pelvis are separated from each other. This has been attested by the most eminent professors of midwifery; they found the above mentioned ligaments soft and dilated, and the bones themselves separated. *Riolanus* demonstrated this to three hundred auditors, on the body of a woman who had been hanged four days after she was brought to bed. *Diemerbræchius* found the bones of the pubis separated the length of the little finger, the very next day after delivery. *Paræus*, *Baubinus*, *Harvey*, *Spigelius*, have seen things of the same nature. All these testimonies may be found in one collection^e. I myself have seen in an illustrious personage, who died on the eleventh week after a very difficult delivery, the bones of the pubis separated in such a manner, that they could move upon each other with a sort of a crackling. I am not therefore surprized, that a person of great eminence in the art of midwifry^f, being taught both by his own observation, and the dissection of many bodies, should lay it down as a rule, that a mutual separation of the bones of the pubis happens in difficult deliveries oftener than is thought. *Cornelius à Solingen*^g found the bones of the pubis separated from each other the distance of a finger's length, and the cartilage by which they are joined softened. In him we likewise meet with many observations, collected from a variety of different authors, which prove that in a difficult delivery the bones of the pubis, and other bones which form the pelvis, are mutually separated from each other, the teguments being softened and rendered more tumid, which is highly worthy of observation^h. We certainly observe, that before delivery the internal membrane of the vagina becomes

E 4 tumid

^e Bonet. sepulch. anatom. Tom. III. pag. 117—119.

^f Levret. l'art des accouch. pag 3. ^g Stalp. Vander. Wiel. observat. 66. pag. 284, et seq. ^h Confer. & Peu, pratiq. des accouch. liv. 1. chap. 12. Sect. 12. pag 185. Denys Vergandelingen, &c. pag. 114, 115.

tumid, soft, moist, and that the lips of the privy members swell insensibly. The mouth of the womb, which before was found, upon touching, to be firm and solid, is rendered soft and dilated before the pains of delivery come on. Does such a humid softness grow before delivery in the ligaments, which connect the bones of the pelvis, that they may be afterwards able to yield when there is occasion in a difficult delivery? Do the separated bones, when once the foetus is driven out, return to their former union, by means of their elastic ligaments? This seems to be probable enough. I have often known women after a difficult delivery, complain of a pain at the juncture of the bones of the pubis, and they have been quite unable to sit up in bed on the first days of their lying-in. These pains however ceased by degrees, and they recovered, though but slowly. But if in a too narrow pelvis so great a force is required to drive out the foetus, that the bones themselves are disjoined, it follows that the head of the foetus must suffer great violence whilst it is forced through such narrow passages. For this reason children are so often still-born, when the delivery is difficult; but if they come out alive, their heads are lengthened, and of an unusual shape. This skilful midwives endeavour, by a gentle and equable pressure of the hands, to reduce to a proper figure. It is generally known that the skull of a new-born child is not all bone, but partly membranous; so that the bones can mutually approach each other; and thus the spheroidal figure of the head may be changed into an oblong figure, that it may the easier pass through a too narrow pelvis.

Nor is less violence done to the womb, whilst it makes an effort to force the foetus thro' a narrow pelvis: for it does not admit of a doubt that the womb, by its contraction, acts in such a manner as to promote delivery. *Hemsterbuys*ⁱ observed about the middle of last age, *Quod gravidæ canis uterus, abdomine aperto,*
suo

ⁱ *Messis aurea exhibens anatomica.* pag. 333.

suo nixu solo, diaphragmate et musculis abdominis non adjuvantibus, fœtum excluserit: “ That the womb of a pregnant bitch, the abdomen being open, by it’s own effort only, forced out the fœtus, the diaphragma and muscles of the abdomen remaining idle and yielding no assistance.” This is confirmed by experiments still more recent. *Caldani*^k, a celebrated physician of *Bologna*, saw in a pregnant bitch, upon the point of being delivered, the womb strongly agitated. He at first thought that this motion was occasioned by the ordure in the womb. He cut the womb, and drew out three living fœtus’s, and two dead ones almost totally rotten: the womb thus evacuated, was so contracted by its own force, that there remained nothing of it’s cavity. The womb continued to move for upwards of the space of an hour; then the motion begun to subside: the slightest stimulating increased it so much, that a candle being brought near it, it was contracted in such a manner that its whole cavity was destroyed. The same experiments have been since tried upon the wombs of two cows not pregnant, both whilst they remained in the body, and when they were taken out.

But there are many reasons to think that the womb of a human creature has the same force. When the pains of delivery are at hand, the skilful midwife, touching the orifice of the womb, perceives this, tho’ the lying-in woman feels no pain; nay, as has been observed in the foregoing chapter, by properly irritating the womb, they excite it to drive its contents out of the cavity. After the mother has been dead, the womb has by it’s own force driven out the fœtus; in one that is alive it often dissolves the placenta which is left after the child, and drives it out when dissolved; it also throws out clotted blood that fills the cavity, and being very much distended in women with child returns to it’s former size. Men-
midwives

* Lettera scritta al chiarissimo, &c. Haller. pag. 320.

midwives have often perceived upon putting their hands into the womb, that they were strongly compressed. *Ruisch* discovered the muscular substance in the womb's fabrick; this has been confirmed by others; upon which subject the reader may have recourse to the observations made in the description of the womb of a pregnant woman¹. All these circumstances concur to prove a strong contraction of the womb in delivery.

Ruisch seems to have been so certain of the strong contraction of the womb (long before he had discovered those muscular fibres) that he was of opinion that the orifice of the womb being first shut, or the head of the foetus stopping it up, the humours contained in the womb might, by the Fallopian tubes be forced into the cavity of the abdomen and into the pelvis^m. Nay, which is still more extraordinary, the womb in a delivery of the most difficult kind seems, by transpiring as it were, to have forced blood out of it's own substance into the cavity of the abdomen; and it was after death found there clotted. A woman died by the difficulty of delivery, without forcing out the foetus: in the corpse, the whole foremost surface of the womb was found covered with clotted blood, which could by no pains be separated from it; and being spread out upon a table, it had the appearance of a cake of coagulated blood, of the length of five thumbs breadth, a foot broad, and three lines in thickness. Upon an accurate examination, no vessel was found broken, nor did a drop of blood appear in the rest of the cavity of the abdomenⁿ; so that it seems probable that that blood was forced out of the very substance of the womb in transpiration, by the violent efforts of the poor suffering wretch. Nor is it improbable that this is frequently the case in very difficult deliveries; so that the

¹ Noortwyck de utero gravido, pag. 106, et seq.

^m Observat. anatom. chirurg. No. 84, 85. pag. 79, 80.

ⁿ Medic. essays and observat. Tom. 4. pag. 447.

the worst consequences might, after delivery, arise from this corrupt extravasated blood, being melted and wasting the viscera of the abdomen : for it seems scarce credible that such a quantity of clotted blood, collected in the cavity of the abdomen, could be carried back again.

Whilst therefore the womb is compressed with such force, and is in a difficult delivery forced by the strong efforts of the woman in labour against the foetus contained in it's cavity, there is room to fear a bursting of the womb itself, by which the foetus either entirely or in part, rolls into the abdomen of the mother, which generally proves fatal. *Gregoire*, formerly a celebrated professor of midwifery at *Paris*, informs us, that in the space of thirty years he saw sixty burstings of the womb ; amongst others he once perceived that the womb being broken at the side of the placenta, the foetus with it's feet touched the diaphragma of it's mother. In another case he takes notice of the head of the child and the whole right side, being without the womb, the other parts remaining in it's cavity, so that the foetus rid, as it were, upon the womb with straddling legs°. We meet with many examples of burst wombs in *La Motte* ^p and others ; that was a particularly remarkable case, when the legs of the foetus had pierced through the placenta and the womb. *La Motte* however drew it out by the feet ; as soon as the placenta was separated, he again plunged his hand into the womb ; it penetrated through the hole in the womb into the abdomen, and could easily touch the intestines ; yet the poor wretch lived three whole days. In another case of the same nature, the lying-in woman lived four days ; and in the corpse there was nothing found but the appearance of a bursting of the womb, which was just big enough to admit the tip of

° Acad. de scienc l'an. 1724. histoire pag. 52. Heister's Waarnamingen 944. ^p Traite des accouch. liv. 4. chap. 5. pag. 463.

of the little finger, the womb being then contracted. We meet with an extraordinary case of a burst womb^a when the whole foetus stuck to the cavity of the abdomen, except the extremity of one foot and the navel-string; yet it was happily taken out by the feet: and after the separation of the placenta, the operator thrusting in his hand, brought the clotted blood out of the cavity of the abdomen. This woman lived eight days. In the corpse of a woman who had borne the pangs of delivery three days together, and perished without forcing out the foetus, the celebrated *Alexander Monro* found a cleft of the womb, thro' which the foetus ripe for birth fell, with the placenta, into the cavity of the abdomen, which contained a great quantity of blood^r.

We read that not only the cleft womb, but the abdomen itself, has been known to make a very loud crackling noise in a difficult delivery, and that the foetus has come out through this aperture, the placenta been drawn away, and the viscera of the abdomen seen by the by-standers. Yet the lying-in woman was perfectly cured by the simple application of butter, with a mixture of white sugar: the scars left as it were the resemblance of a healed wound behind it, as if the skin had been scratched with a blunt needle. This surprising case would be hardly worthy of credit, if eye-witnesses had not made affidavit of the truth of it before a magistrate; and the midwife and another woman who drew out the placenta, had not been amongst the witnesses. These testimonies, which have the sanction of public authority, are preserved by the secretaries of the *Edinburgh* society.

Certain it is, that the womb is sometimes burst in a difficult delivery. It is worthy of consideration, whether the symptoms by which a bursting of the womb can be foreknown, are discoverable; or whether

^a *Peu pratique des accouch.* lib. 1. chap. 8. pag. 79, et seq.

^r *Essays & observat. physic. & literar.* Vol. 2. artic. 24, pag.

ther there are diagnostic symptoms which shew the womb to be already burst? In fine, we should enquire whether any aid can be hoped for from art in so great a calamity.

Whatever obstructs the coming out of the foetus, may be reckoned amongst the causes of a burst womb; yet the womb is not broken always, even in the most difficult deliveries: nay, this is known to happen but rarely*. But as all the bodies of women who die in child-bed are not opened, there seems to be just reason to suspect that the womb has been burst in some of them, though we cannot be certain of this, especially if they have made great, but vain efforts, to be delivered.

The immediate cause of a burst womb, assigned by *Levret*^t, is the kicking of the foetus whilst it is shut up in too narrow a pelvis, especially when the child is convulsed, which often happens when it is at the point of death: if the womb should then be at once urged by its own force, and the efforts of the mother bursting is very much to be feared. Add to this, that the force of the muscles is excessively increased by convulsive motions, as has been remarked in the history of the epilepsy or falling sickness. It is demonstrated by observations of the most judicious authors, that the womb has been broke in all its parts; these have been collected by the celebrated *Crantz*^u, who wrote an admirable treatise *de rupto utero*, upon the ruptures of the womb. The symptoms which precede a rupture of the womb are as follows^x: the foetus after having for some time continued motionless, is agitated by sudden motions, which make the mother feel acute pains in that part of the matrix which is threatened with a rupture; but the pain has its chief seat about the middle of the fore part of the lowermost belly or epigastric region. These joltings return periodically,

* *Crantz de utero rupto. pag. 12.*
^t *L'Art des accouch. sect. 595. pag. 97.*

^u *In loco modo citato & seq.*

^x *Levret ibid. sect. 597, 598. pag. 98.*

riodically, the intermediate space of time not being limited; the last, but most violent agitation, which denounces the death of the foetus, comes at length; afterwards these motions cease. For generally speaking, the foetus dies in convulsions. To these symptoms, the celebrated Crantz ^y, adds the following: *Vastum et distentum abdomen, retracta vagina, orificium altum, dolores quidem veri, sed violenti, sine magnis intervallis frequentes, sine partus progressu ingrati, statim ab initio aut medio naturalis nixus tempore adsunt. Ruptis aquis dolores vehementius instant, sine intermissione improbi, sine partus spe crudeles, ita mulierem discruciant ut et ignarum vulgus his non enixam vehementer miretur, &c. donec tandem violentissimo subsultu elatus foetus, contractum calcitratum uterum perfodat, aut membro magis obtuso dilaceret: A vast and distended abdomen, the vagina pushed back, the orifice high, pains true but violent, recurring frequently without considerable intervals, tormenting the patient without promoting delivery, come upon her at the very beginning, or in the midst of the time of the natural effort. The humours having gushed out, the pains grow more violent, causing unintermitted anguish, protracting the patient's sufferings, without affording any hopes of delivery, they make the woman in labour feel such misery, that the ignorant vulgar is surprised at her not being delivered, &c. till the foetus raised up by a violent leap, pierces the contracted womb with a kick, or tears it with some part of its body." In the notes ^z, he afterwards canvasses the question, whether the womb is broke whilst the waters remain collected, or afterwards when they have flowed from it, the membranes being broken; and having considered all that can be alleged on either side, he concludes, *Nihil certi in hanc rem statui posse; hucusque vero in bene descriptis observationibus uterus semper post effluxas aquas ruptus**

^y De rupto utero, pag. 15, 16. & seq.

^z Ibid. pag. 17, 18.

ruptus est : “ That nothing can be determined with
 “ certainty upon this subject; however according
 “ to the most exact observations hitherto made,
 “ the womb is generally burst after the humours
 “ have run out.”

If the symptoms just mentioned have place, there is great reason to apprehend a rupture of the womb; if those are succeeded by the following, it is plain that the womb is already burst ^a. If, for example, a fainting fit or great weakness should follow, the mind being unhurt, if the face should become pale, if the pulse should grow weak, if the abdomen should swell with a big smooth tumour, with a sense of unusual, but not disagreeable warmth; if the extremities should be cold, and if drops of cold clammy sweat should be seen on the face, the patient does not hold out long, but generally dies in convulsions. Sometimes whilst the womb is burst, the by-standers hear the noise of a concussion, and after a fainting fit, the patient seems to recover; the motion of the foetus is seldom or ever felt afterwards; the pains of delivery are at an end; the limbs of the foetus which could before be touched in the mouth of the womb, are no longer felt; that is, if either the whole foetus, or the greatest part of it, sticks to the cavity of the abdomen; but then by touching the abdomen, the parts of the foetus may be more easily distinguished by the touch than they could be before, whilst they still stuck to the cavity of the womb. It has been justly remarked ^b, that this series of symptoms does not always take place; for some women, without any appearance of the womb's being burst, die in a few hours; whilst others, as appears from the above cited observations, live for several days; in whom there should, or at least might be various different symptoms according as the foetus which remains in the abdomen, presses or irritates the viscera. Nor does the
 foetus

^a Ibid. pag. 19. & seq. Levret art des accouchm. sect. 599. pag. 98.

^b Crantz de utero rupto, pag. 22.

foetus always pass into the abdomen upon a rupture of the womb, for in an easy and natural birth, the foetus has been known to come out without the assistance of the midwife, the placenta immediately following it. The mother having died upon the same day, her body has been opened, and a rupture of the womb discovered^c. We conclude that the foetus sticks to the abdomen, the womb being broken, if the part which was before touched in the orifice of the womb be no longer felt, if pure blood flows through the privities, or if congealed blood drops from them; if the orifice of the womb, as generally happens after delivery, seems inclined to close; and if the womb be fallen down^d. But the symptoms opposite to these, indicate that either the whole foetus, or a part of it, is still contained in the cavity of the womb.

But as many of the symptoms of a burst womb, are taken from the discharge of blood which runs into the cavity of the abdomen, the same might be occasioned by any other hæmorrhage, though the blood should not gather in the abdomen. If the blood flows through the orifice of the womb and the vagina, the cause is evident: but if the navel-string should be broke, the membranes being still entire, or if (the membranes being broken, and the head of the foetus stopping up and filling the mouth of the womb) the same thing should happen, the cavity of the womb will be filled with blood, the foetus being convulsed through inanition, will strike the womb, the woman in labour will be weakened, will grow pale, and many symptoms will concur, which will pass for signs that the womb is either already burst, or upon the point of bursting. But this cause of an internal hæmorrhage has seldom occurred. *La Motte* informs us, that it never fell under his observation more than once, as was observed in sect. 1304; however instances of it have been known. We meet with another case amongst

^c Ibid. in notis.

^d Crantz de utero rupto, pag. 39.

amongst the observations of *Levret*, cited by *Crantz*^c, when the navel-string was broke amidst the pains of delivery and after going several times round the neck of the fœtus, suffocated it. But when the belly swelled more and more, chiefly in the epigastric region, and at the same time seemed hard to the touch, *Levret* apprehended that there was an internal hæmorrhage in the case, rather than a rupture of the womb, as after it the abdomen was filled with blood, whilst the tumour appeared smooth and soft; by which symptom a rupture of the womb is distinguished from an internal hæmorrhage, which fills the whole womb with blood. Thus, though in this case, the true and certain, bordered upon the doubtful and the false, it was easy for one who was a perfect master in his profession, to discover the true diagnostic symptoms. For as the head of the fœtus almost filled the whole vagina, and yet was not moved forward by the great and frequent pangs felt by the woman in labour, there was room for a suspicion that the navel-string having got about the neck, or some of the limbs of the fœtus, retarded delivery; and for that reason, there was reason to apprehend that the placenta, to which the string is fastened, should be separated from the womb, and an hæmorrhage should follow, as is often the case. Nor was he any way in fault in not foreseeing the breaking of the navel-string, as that but seldom happens, and the physician cannot possibly have any knowledge of it as long as the fœtus fills the orifice of the womb with its head. He distinguished the internal hæmorrhage of the womb, from that which follows upon a rupture of the womb, and pours blood into the cavity of the abdomen; and from this knowledge, he determined what succour should be given to the lying-in woman.

It remains for us to consider in what manner women in labour should be assisted, when the difficulty of delivery proceeds from the close joining of the

bones of the pelvis, which obstructs the passage of the foetus.

The excellent *Deventer*^f advises midwives, if they find by the touch that the pelvis is narrow, not to press their patients to make great efforts, whilst they feel the pains of labour: there is no haste necessary upon this occasion; the chief hope is, that the head of the child will be insensibly lengthened by a slow and gentle effort, and so may be made capable of passing through these straights. For this reason, no medicines should be given, nor no art used to increase the violence or the frequency of the pains, though this is often eagerly desired both by the woman in labour, and the by-standers. It was before observed, that the bones of the pelvis consist of several different bones, which seem to have a power of mutually receding from each other, in order to make room for the foetus to pass; they are bound together by intervening cartilages and ligaments; these have been observed to swell, to soften and grow flexible whilst delivery approaches, that they might be thereby better able to yield; but these things should happen gradually, and therefore a slow delivery is thought the best in women who are brought to bed for the first time. Women in labour should be placed in the most convenient position, whether in a bed or chair, so that the *os coccygis* may be able to yield freely, and may not be pressed by the weight of the body or the cloaths. Nay, when the head of the foetus sticks in the passage out of the pelvis, the author advises midwives equally to press back the *os coccygis* with the back of the hand, and so to make room for the foetus which is coming out &c.

But if the head of the child should stay in the cavity of the pelvis, and yet cannot be forced through on account of the narrowness of the passage, though the *os coccygis* should be forced back, then there is occasion for other assistance.

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^f Nov. lum. obstetric. cap. 27. pag. 115.
obstetric. cap. 27. pag. 122, 123.

& Nov. lum.

ance; different persons have recommended different remedies, but these are not equally safe. Many have advised, that whilst the head is not quite fixed and immoveable in the cavity of the pelvis, the midwife should push the head of the foetus backwards, and pull it out by the feet. But if the head should stick to the pelvis, and it should be a difficult matter to get it out, then the situation of the child cannot be changed, nor the head pressed back. This is a melancholy case, of which many sad examples have occurred; if the child sticks long in these narrow passes, it dies; and being seized with convulsions before death, it sometimes bursts the womb of the mother by its violent kicking as has been said before. If the child should die, the head grows so soft after a time, that it can be forced out of the womb by a powerful effort. But this generally happens too late, as that strong compression of the soft parts frequently gives rise to a gangrene fatal to the mother, or if she should escape, the cure is very troublesome, and often leaves very bad consequences behind it, the adjacent parts, the vagina, the rectum and the urethra being ravaged by the gangrene; such examples are to be met with in every author.

Hence recourse has been had to cruel operations, surgeons endeavouring to draw the foetus out with hooks. True it is, that there is no necessity for sparing the dead child; but it will appear in the sequel, that we cannot be always certain of the foetus's being dead in the mother's womb. There having been shocking examples of torn foetus's pulled out by force, transpierced with hooks, that have shewn themselves to be alive by their lamentable screams. Sometimes the hooks, badly fixed, or having dropt from the torn parts of the foetus, whilst it was dragging out, have torn the unhappy woman in labour, especially if this was attempted when the foetus had been dead for a time and half rotten. For this reason, the prudent avoid these operations altogether, or have recourse to

them but very rarely. The excellent treatise of the celebrated *Crantz*, upon the instruments of midwifery, is worth consulting with regard to these particulars; in it, all these matters are accurately treated of, and we at the same time meet with a horrid case of a man-widwife *, who fixed a hook to the head of a foetus, tore out the brain, and in about an hour's time dragged out the child, excessively hurt, but still alive, and by its loud cries, as it were upbraiding him with cruelty. And thinking this villainy too little, he pressed the child to death; such barbarity should have been punished by the hand of the common hangman.

In this difficult case, men eminent in the art of midwifery, have exerted themselves to the utmost to disengage the mother without hurting the foetus, and to preserve the latter if possible. The head being wedged in the pelvis, could not be drawn out with the hands; they therefore devised a proper instrument to catch the head with its iron hands, as it were, and safely bring out the living foetus if possible ^h. A list is in the same place given in chronological order, of authors who have either invented such instruments, or so improved them, that they might be made use of with ease and safety. It is at the same time remarked, that some of the instruments of the antients could easily be adapted to this salutary purpose. For a pair of pincers was applied, whose broad extremities could take the head of the foetus, but those extremities were to have a hollow curvature, that they might be the better fitted to the round figure of the head, and that they might take the larger portion of the surface, and so hurt the child the less.

But it is evident that such pincers as these, could not have their legs joined together like common pincers; for then there would be a necessity of thrusting both ends into the womb at once, and afterwards there would be a necessity of opening them in the vagina.

* Sect. 38. pag. 37.

^h Cranz de re instrum. in arte obstetric. sect. 9. pag. 13.

vagina itself, in order to take hold of the head; which could not but be attended with a violent tearing of the parts: besides the extremities of the pincers ought to be placed between the head of the foetus and the mouth of the womb, which could not well be effected if the legs of the pincers were joined together. But as the legs are separate, one may be introduced after the other; and afterwards, if there should be occasion, the legs of the pincers may on the outside of the vagina, be fastened with an axis or a screw, passing through the holes of the legs, placed one upon another; and in this manner the head may be pulled out: it is evident from hence that the legs should be of a good length. There however always remained a difficulty with regard to a straight pair of pincers to join the legs, for which reason *Levret* made use of a crooked pair of pincers, *Cujus labia medium capitis diametrum aptius prebendunt, cujus crura facilius junguntur & clauduntur, & qui quo caput propius adducit, eo a frænulo vulvæ magis distat*: “Whose
 “extremities could cleverly take hold of the middle
 “diameter of the head; whose legs are more easily
 “joined and closed, and which, the nearer it brings
 “the head, is the farther distant from the membranes
 “of the privy partsⁱ.” *Constructio ad formam vaginæ, pelvis & capitis infantis, exacta, bicurvilinea, & cava, a prima inventione his incommodis vacavit*: “The construction of pincers of this sort being suited to the
 “form of the vagina, the pelvis and the head of the
 “child bicurvilinear and hollow, when it was first invented, obviated all the above inconveniencies^k.”

In the same place he admirably answers all the objections which have been made against the use of these pincers.

An age or more is elapsed since some of the professors of midwifery have been much more successful than others at difficult delivery, when the head, as it were, wedged in, has stuck in the pelvis. They have been often successful in bringing about de-

ⁱ Ibid. sect. 34, 35. pag. 34, 35.^k Ibid. sect. 42. pag. 45.

livery upon such occasions, whilst others, though of great experience in the art of midwifery, have failed: they have kept their method a secret, that it might not be known to others. It seems probable that the inventor was *Chamberlin*¹, an Englishman, who acquired a great reputation in midwifery, which he practised with his three daughters. This secret lay hid for above sixty years, and *Roger van Roonhuysen* became famous for using it at *Amsterdam*, so that this secret method being either bequeathed or sold, with an injunction to secrecy, was possessed only by a few who became famous in the art. Therefore *James de Vischer* and *Hugo van de Poll*, are worthy of the highest praise for purchasing this secret, in order to communicate it, and for proving the certainty of the secret they had discovered by public testimonies, in opposition to some self-interested and dishonest adversaries, who wanted to impose upon the public. They gave so exact a figure of the instrument in all its dimensions, that artificers could imitate it any where.

This instrument is recommended by its simplicity; for it is a simple lever, whose extremity inclining to a curve, is put in between the bones of the pubis and the head of the child, and is insensibly pushed forward till it comes to the occiput (the hind part of the skull) of the child and every where touches its convexity with its curvature. Then the other extremity of the lever is raised by insensible degrees, till it touches the juncture of the pubis, which supplies the lever with a steady roller, and by raising this extremity higher, the head of the infant is pressed a little lower and more forward, and is thus delivered out of these narrow passes. Whilst the midwife directs the lever with one hand, the other supports the anus in order to prevent a laceration; and at the same time directs the head of the fœtus then disengaged, towards the foremost parts where there is more room for the child which is about to be born. But every thing

¹ Ker Roonhuysiaansch geheim ontdeekt, &c. pag. 19. & seq.

thing relating to the construction and application of this lever, is exactly described in the above-mentioned excellent treatise.

But though the excellent artists, who have invented or brought to perfection, different sorts of pincers, deserve the highest praise, on account of the industry and candour, with which they have communicated their discoveries; this lever of *Roonbuysen*, deserves to be preferred to all the rest.

This little and simple instrument may be easily hid, lest the woman in labour, and the by-standers should be terrified at the sight of surgical instruments. Hence whilst this discovery remained a secret, many were of opinion that the followers of *Roonbuysen* used no instrument, but were successful in these difficult deliveries, and often brought them about in a few minutes by a dexterity of hand peculiar to themselves. They were chiefly surpris'd that the possessors of this secret, being called to women in labour, did not immediately enter upon the operation. For if the head did not then stick, without motion in the narrow passes of the pelvis, but moved to and fro, they waited till it was thoroughly wedged in. The reason is evident, the extremity of the lever applied to the occiput, would totter, unless the head of the foetus was steady, and not liable to fall out of its place. It is highly beneficial likewise, that the power of the lever should act upon the occiput, which is the strongest of the bones of the foetus's head. The head being taken hold of by the pincers, is compress'd and made more oblong than it was before; this makes the child's coming out more easy, but at the same time leaves some room for an apprehension, lest the soft encephalos (contents of the skull) should be injured by the compression.

Many successful experiments have more than sufficiently proved the utility of this simple instrument. For *John de Bruyn*, from whose only daughter and heiress this secret was bought, in the space of forty-

two years, delivered eight hundred children alive, whose heads were wedged in the narrow pelvis. So it appeared from the memorandum-book of *De Bruyn*, who was always thought highly deserving of credit. But as he had a very humble opinion of himself, and was traduced by the calumnies of men, envious of his merit, he had not as much credit with his fellow-citizens as he deserved. But the number of children preserved by his art, must doubtless have been greater. For the few who were acquainted with this secret, having been often called to women who brought forth with difficulty, were surprised that he should in so many years, preserve the lives of eight hundred children only, when they in a much shorter time had been much oftener successful ^m. What destruction then have they brought upon the human species, who have concealed this secret! I wish *Frederick Ruisch*, to whom our art is so much indebted, may not deserve to be reckoned one of their number. What praise then is due to those, whose innate virtue excited them to reveal it! Such an action is its own reward, and the heart-felt joy of a mind satisfied with itself, will be the prize of him who does it at that time.

————— *Dum numina nobis*

Mors instans majora facit.—————

When from the near approach of death the gods
Over our minds new influence acquire.

As soon as the lever came to my knowledge, I recommended it to all midwives; and many have experienced it to be of the highest service.

If the pelvis should become so narrow by protuberances of the bones out of their natural place, or by their bad conformation, as to leave no hopes of getting out the foetus by any art whatever, there then remains no remedy but the Cæsarean operation.

This

^m Voorreden *ibid.* pag. 29. & seq.

This will likewise hold, if the head of the foetus should, contrary to the course of nature, be of such a thickness, as not to find room in the cavity of the pelvis, even when in its natural state; especially if the head should be solid and of a monstrous bigness. For if its bulk should be increased by lymph which distends it, it yields, suffers itself to be lengthened; and observations shew us, that such difficulty of delivery is often obviated by the lever described above. Sometimes the child's head, pressed by the strong efforts of the woman in labour, is broke, and the lymph flows out; but the child generally comes out dead, or dies soon after its birth. The reader may consult what has been said upon this subject in sect. 1217 and 1218.

No one ever doubted that the Cæsarean operation could be performed upon the body of a dead mother, in order to save the life of the child; nay in some countries it is ordained by law, that it should be always tried, and that law is a wise one. *Charles*, king of the *Two Sicilies*, made a law in the 49th year of the present century, which directs that, "Any person by whose deceit, hindrance or negligence, the Cæsarean operation is neglected, to the loss of the foetus, or even retarded, and also he whose malice occasions abortion, should be looked upon as guilty of murder." Orders moreover were given to all judges, "to proceed against such with all severity, and commit them to jail, and prosecute them according to the usual forms and laws of the kingdom, that they might afterwards by those, whose duty it is, be condemned to that punishment which the law inflicts upon such as are guilty of murder, according to the degree, quality and circumstances, of their treachery or negligence."

All things relating to this subject in theology, jurisprudence and physick, are to be found collected, digested,

74. Of difficult DELIVERIES. Sect. 1316.
gested, and defended against all objections in this most useful work °.

It is obvious that the foetus should be taken out of its mother's womb as soon after her death as possible; as it is then in great jeopardy. Yet the life of the foetus should not be despaired of even a considerable time after the death of the mother, as is evident from many experiments, which may be examined^p. Amongst others, there is an extraordinary case of a woman with child, who was stabbed in several places by her husband, out of whose womb a child was taken by the Cæsarean operation, forty-eight hours after her death; though it had been wounded in the foot through the pierced womb, it survived during a quarter of an hour.

There should however remain no doubt of the death of the mother, before the child should be taken out by this operation. It cannot be denied that *Winslow* and others, have demonstrated that the symptoms of death, are not as certain as is generally thought. It is well known that *Vesalius*, the emperor's physician, and the greatest anatomist of his age, was accused of an error of this kind, which he was to expiate by a pilgrimage to the holy land, in his return from which he died.

Hence it follows, that there is need of the highest circumspection upon this occasion, especially if the woman with child should be thought to die suddenly; for she may deceive us by a syncope or swooning: wherefore such remedies as excite, and strongly stimulate the nerves, should be tried before-hand; for it would be cruel to cut open the womb of a woman not yet dead, in order to take out the foetus, as there are no hopes of saving a woman who undergoes this operation, as shall presently be shewn; therefore it is ordered by the *Roman* ritual; that, "If a woman with
" child dies, the foetus should be taken out as soon
" as

° Pag. 53. & seq.

^p Ibid. pag. 72. & seq.

“ as possible ^q.” Nothing could be more cruel than the proceeding of those who advised to cut up the mother’s belly when death approached, and not to wait till it was quite over. The venerable and learned author above-mentioned, justly exclaims against such barbarity ^r.

When a skilful and prudent physician, after a chronical disease which has lasted a long time, or a very acute disease, perceives death approaching in a woman with child, he cannot easily be deceived, when he pronounces the patient to be dead; but it requires the greatest attention to distinguish a syncope from death. Great caution is requisite with regard to those who have in their life-time been subject to fainting fits and hysteric disorders, and who have been seized with a violent syncope at the time of their pregnancy. For in such a syncope they turn pale, the face falls, becomes ghastly, the extremities grow cold and hard, and both pulse and respiration cease entirely. I very well remember having been sent for on a sudden to a woman with child in her fourth month; she was so much exhausted with a cholera, and with sudden and copious evacuations in five hours, that after being seized with convulsions, she fell into a real syncope, so that she was thought to be dead by the by-standers when I came. For a quarter of an hour I had no success, though I caused her extremities to be rubbed, warm clothes to be applied, and both her tongue and nostrils to be stimulated with spirituous remedies; her friends were offended at my tampering with the body; I however proceeded, and after a few minutes, I perceived some motion in the carotidal arteries; she opened her eyes, groaned, and by degrees came to herself; her exhausted body was gradually restored by good nourishment, and her strength by cordials, so that her recovery was complete, and in seven months she was delivered of a living

^q Ibid pag. 59.

^r Ibid.

76 Of difficult DELIVERIES. Sect. 1316.
living child, which however was weak, and which lived but a few days.

That most infallible criterion of certain death, I mean the putrefaction of the body, cannot here be expected, for the foetus must certainly perish first: sometimes we should be obliged to wait two days and longer, before the body could be smelt. Yet recourse is had in this case to the Cæsarean operation, in order to preserve the child.

When upon a careful, and not a superficial examination, no symptoms of life appear, if no respiration, no motion of the arteries, or heat is perceived; if the face was ghastly before death, the eyes dull and obscured by a sort of viscid covering; if the limbs are stiff, the extremities cold; if the upper jaw be separated from the lower, and there remains a gaping, which is however diminished afterwards, the elasticity of the muscles being increased by the cold of the body, but not so as to be quite shut up; if no sudden and copious evacuation precedes such as may give room to suspect a compleat syncope; if the motion of the humours still and discontinuing, can be excited by no stimulating remedies^s; then if there be not a physical, there is at least a moral certainty of perfect death, which is increased if no signs of sense or motion are observed upon the application of fire to the body.

For an excellent author observes^t, *Aliud est dicere homines multoties errasse, illos reputando mortuos qui vitam retinebant: aliud est dicere, vivos a mortuis per signa internosci non posse: sicuti etiam aliud est, dicere, sæpe adulterinam expendi pecuniam pro incorruptâ; aliud tamen adstruere, non dari modum ad discernendum in pecuniis aurum probum a vitioso; primum enim verum, secundum omnio falsum, existimatur: “ There is difference between saying that men have often “ been mistaken in thinking those dead who were “ really alive, and saying it is impossible to distin-*
“ guish

^s Ibid. pag. 60. & seq.

^t Ibid. pag. 66.

“guish the living from the dead by any signs what-
 “ever : as it is one thing to say, that false coin is
 “never uttered for true ; another to assert, that there
 “is no way of distinguishing good gold from bad ;
 “for the first assertion is true, the second altogether
 “false.”

Wherefore in those places where there is a law against burying the dead in less than eight and forty hours after death, they are allowed to be buried sooner, if the physician who has attended the patient in his last disease, gives it under his hand, and at his peril that he is sure of the death's being real. Except in this case, the law is strictly observed, least in the country especially where such shocking mistakes might more frequently happen, persons might be buried, though dead only in appearance. Thus the dangerous practice of the *Jews* is counteracted, who think they do the deceased an injury, if his body is not immediately committed to the earth, and that, whilst it is still warm.

The celebrated *Heister* ^u, who is universally esteemed on account of his knowledge, his candour, and his long experience in practice, delivers himself upon this subject as follows : *Quam rarissime enim et vix ex centum millibus, qui a prudentibus, vel etiam a mediocri vulgo, pro mortuis habiti sunt, vel semel fessellit, ut non vere mortui fuerint atque revixerint. Neque adhuc quantum novi, ullum prostat exemplum, quod ejusmodi gravida, pro mortua habita, sub sectione revixerit. Imo si hoc aliquando etiam præter spem & expectationem contingat, medicus inde nimium terreri non debet : quia scelus non commisit, & sectionem malo animo non instituit ; sed ob fætum servandum eam pro cadavere incidit, ad quod faciendum partim ex religione, partim ex legibus, ut mox ostendemus obligatur :* “ It very seldom
 “happens, hardly once in a thousand instances, that
 “even the vulgar, much less persons of skill, are de-
 “ceived with regard to the dead, and that those who
 “have

^u Instit. chirurg. Tom. II. sect. 5. chap. 113. pag. 758.

“ have been thought to be dead, have come to life
 “ again. Nor have I ever met with an instance
 “ of a woman with child, who has been thought dead,
 “ coming to life under the operation. But if this
 “ should ever happen, contrary to all expectation,
 “ the physician should not be too much shocked, be-
 “ cause he is not guilty of any crime, and did not
 “ proceed to dissection with an ill intent, but cut the
 “ body in order to preserve the foetus, which he is
 “ bound to do, as well by the precepts of religion as
 “ the laws, as we shall shew hereafter.” But all sus-
 picion of crime is removed, if the Cæsarean operation
 is performed upon the corps, with the same caution
 as upon a living woman : for then the wound could
 not be considered as mortal, nothing being more cer-
 tain, than that women have recovered after having
 undergone this operation, as will appear in the sequel.
 The senate of *Venice**, wisely commanded, that
 care should be taken of this, that the abdomen should
 not be cut cross-wise, as is usual in the dissection of a
 corps, but that it should be cut as in a living body,
 which undergoes the Cæsarean operation. It was
 likewise ordered by the senate, that the college of
 physicians should give in to the magistrate, the
 names of those who were thought most capable of per-
 forming this operation. It required, at the same
 time, that a list of these names should be exposed to
 the eyes of every one, in every apothecary’s shop,
 that the inhabitants of *Venice* might know with cer-
 tainty, whom they should have recourse to in these
 melancholy cases ; this advantage would likewise fol-
 low from it, that surgeons would perform the Cæ-
 sarean operation with greater courage and dexterity
 upon the living, for having often performed it upon
 the dead ; and what some of the most eminent man-
 widwives have often wished would come to pass ;
 upon

* Instit. chirurg. Tom. II, sect. 5. chap. 113. pag. 758. in
 notis.

upon opening the body, the errors committed by operators would be discovered, whether owing to their ignorance or their rashness, and they might be punished according to their deserts if those faults could be discovered, which must otherwise for ever be concealed.

We come now to treat of performing the Cæsarean operation upon living women, with a view of preserving the life both of mother and child. For though many observations sufficiently evince that this has been attempted with success, no man of skill can look upon the Cæsarean operation as free from danger. The abdomen and the pregnant womb itself, turgid with its vessels, dilated and full of blood, must have a large incision made in them. It is not strange that this operation should excite horror, not only in the women who are to undergo it, but likewise in the physicians and the surgeons who are to perform it. And as it is not always attended with success, many have condemned it altogether, as cruel and useless. Add to this, that as both the woman in labour, and the by-standers seldom consent to this operation till the strength of the former begins to fail, then, death, if it follows, is ascribed to the operation which might have been successful if undertaken sooner. *Paræus* ^y indeed acknowledges, that he has heard of the Cæsarean operation's being performed with success, but he could never bring himself to believe that it has been performed with safety to the mother; for which reason he concludes, *Id curationis genus quod periculi & desperationis plenum est, nunquam usurpandum esse*: "That that method of cure should be always avoided as extremely dangerous." In like manner, *Mauriceau* ^z loudly inveighs against the Cæsarean operation, which he declares should never be attempted on a living woman, being almost infallibly mortal, and of such a nature, that a woman can hardly

^y Lib. de generat. cap. 31. spach. gynaec. pag. 422.

^z Lib. 2. chap. 32. pag. 352. & seq.

hardly survive it but by a miracle; nay, he goes so far as to make it a doubt whether any woman ever was cured by it. He censures all the stories that have been told of the Cæsarean's operation's being performed without hurting the mother, as falsehoods and impious frauds, and inveighs most bitterly against *Roussetus*. There is a little treatise extant upon the same subject ^a, in which the author, a man very well skilled in midwifery, declares that he had never undertaken the Cæsarean operation, and never intended to undertake it, till he had read of some one who had performed it with success, by whose method of proceeding he might be directed.

That excellent surgeon *De la Motte* ^b, treating of the Cæsarean operation, confesses, that if the disadvantageous structure of the bones of the pelvis did not leave sufficient room for the foetus to come out, then there remained nothing but to chuse between having recourse to the Cæsarean operation, and letting both the mother and the foetus perish. He acknowledges, that if such a case should fall in his way, after advising with men of skill, he would without hesitation, undertake the operation, and perform it with the utmost care. He says, that he takes this operation to be as possible as many other difficult operations, and that its being undertaken so late, and not till the woman in labour is in the utmost extremity, is the reason of its so seldom succeeding. He however condemns the rashness of those who have recourse to it in other cases of difficult delivery, being firmly persuaded that, except where the vicious structure of the bones of the pelvis prevents the passage of the foetus; in all other cases of difficult delivery, the midwives right hand may give the patient relief. He then relates the case of a woman who had been three days in labour, whilst the arm of the dead foetus hung out of the orifice of
the

^a *Peu pratique des accouchm.* liv. 2. chap. 2. pag. 316, &c.

^b *Liv.* 4. chap. 12. pag. 521. & seq.

the womb. The woman herself eagerly desired that a hole might be made in the abdomen, and the foetus taken out, and strenuously opposed the midwife and surgeon, when they were for thrusting their hands into the vagina, in order to examine how matters stood; nor could any advice, nor the horrid apparatus of instruments, necessary in this operation, make her alter her fixed resolution.

Under pretext of proceeding to the Cæsarean operation, he ordered her to be held fast, and having plunged his hand into her womb, he seized the foetus, and in a moment of time, drew it out entire, though quite rotten; thus did he preserve her, as it were, against her will.

But I was greatly surpris'd that the same author^c, at the end of the same chapter, after saying that he would undertake the Cæsarean operation without hesitation, in a case of necessity, should express himself as follows: *Metus ne approbarem crudelem hanc operationem, & animos adderem aliis chirurgis, ut illam tentarent, ad exemplum Ruleau, facit ut protestor, me, licet, versarer in tali casu, ubi crederem illam absolute necessariam esse, simulque adesse optimam spem felicitis successus, tamen nunquam illam tentaturum*: “ The fear of seeming to approve this cruel operation, and encouraging other surgeons to attempt it after *Ruleau's* example, makes me protest, that though a case should occur, in which the Cæsarean operation should seem to be necessary; and though there should be good hopes of its being successful, I should never be prevailed upon to attempt it.” It appears to be a much more cruel operation, when he, on the fifth day, with a knife, cut the head of a child which stuck without motion in a narrow pass of the pelvis; and then having thrust his hand into the cavity, drew out the child still moving.

It is now known by a variety of experiments, that the Cæsarean operation has been performed, and yet

the mother has lived and born children afterwards. In sect. 170. 3. where we treated of mortal wounds, two cases were related of the Cæsarean operation's being performed with success, in one of which, the midwife brought out the foetus after having cut open the womb. Many more observations have been collected^d, which shew that the Cæsarean operation has sometimes been performed with success, but it would be tedious to cite them in this place.

All authors are agreed notwithstanding that this operation is dangerous, and that recourse should be had to it, only when the patient cannot otherwise be freed from her burthen. For if we examine the history of Cæsarean operations, we shall find that recourse has been sometimes had to them when there were other methods of cure, which might have been used with confidence. Thus we read, that on account of an obstruction of the pudenda, the abdomen of a woman with child has been cut, that the foetus might be taken out; but it cannot be denied, that this obstruction would have been with more safety removed by a penknife, as appears from what has been said above: recourse has been had to the same operation, when the child bent double, has come out with its posteriors foremost, yet it is well known that the skilful in midwifery, never looked upon this as a cause of difficult delivery, as it is very common for the foetus to come out in that manner with great ease. We read of many cases of women, who having undergone the Cæsarean operation, have been often happily delivered afterwards; in these the pelvis could by no means be found fault with for its vicious structure, which is by no means mended by this operation. We read of others who have often undergone it, and who could not bring forth without it: in these the pelvis was doubtless too narrow to give passage

^d Academ. royal de chirurg. Tom. I. pag. 623.—650. Tom. II. pag. 308.—350. Cangia mila embryol. sacr. lib. 3. cap. 1. pag. 113. & seq.

passage to an adult foetus. As long as in the populous city of *Amsterdam*, *Roonbuys's* lever was known to but few, they only knew how to disengage the head of the foetus when wedged in the narrow passes of the womb; others being never, or very rarely successful in this operation, and that only in the case of a dead child. Therefore as the art of midwifery has been improved, with admirable discoveries by *Roonbuys*, *Levret* and others, we may hope that there will but seldom be occasion for the Cæsarean operation; especially if a salutary law be made to prevent women, ignorant of the art, from doing the office of a midwife; for these by their want of skill, often change a natural delivery into a very difficult one.

Recourse therefore should be had to the Cæsarean operation, when it is evident that delivery cannot be effected without it: according to *Levret* ^e, this proceeds from the too great narrowness of the pelvis, so great a narrowness as to prevent the man-midwife from getting his hand into the cavity of the pelvis, or at least so great as to make him unable to pull the child out by the foot when he has got hold of it.

But if, the womb being burst, as was said before, the whole body of the child should cling to the cavity of the abdomen, then delivery is impossible, and there remains nothing farther to be done, but to proceed to the Cæsarean operation; but if we consider the terrible symptoms that generally attend a rupture of the womb; as for example, a fainting, a ghastly paleness, a coldness in the extremities, a weak pulse, and a cold sweat, which is often quickly followed by death; who will venture to attempt such an operation in so dreadful a state? yet it should be undertaken immediately, in order to be successful. Will the woman in labour, the parents or the bystanders, be willing to give ear to desperate advice upon such an occasion; or will any surgeon be so presumptuous as to undertake the operation. The ad-

mirable *Levret*^f, has with good reason started all these difficulties.

With regard to those foetus's which are formed without the womb, in the ovarium (the female testicle) or in the Fallopian tubes, &c. we shall speak of them hereafter; it is evident they cannot be got out by the method used in natural deliveries, for which reason, the Cæsarean operation is necessary here likewise. But, as is justly observed by *Levret*^g, before so dangerous an operation be undertaken, it should be known with certainty, that the foetus is not in the womb, but without it. But the diagnostic symptoms which afford a full certainty of this, have not been hitherto discovered.

For though the pelvis must be of a proper size to give passage to the head, that the foetus may come into the world, the delivery may become very difficult, though the pelvis be well conditioned, if the head of the foetus be of an uncommon magnitude; and if it should be of such a size as to make its passing impossible, the Cæsarean operation alone could give relief^h, especially if there should be any danger of a rupture of the womb from the kicking of the foetus, whilst it sticks in these narrow passes. But as it is known from many observations, that even the large heads of robust children, have been pressed out gradually, or pulled out by pincers, or the lever of *Roombuys*, since the bones of the foetus can not only give way, but rise one above the other; when it is more over clear from what has been said before, that in the most difficult delivery, the bones of the pelvis recede from each other, and make the passage wider; it does not seem easy to have a perfect certainty of the impossibility of the foetus coming out, which however should be had before so dangerous an operation as the Cæsarean should be undertaken. It is known with certainty, that children afflicted with a hydrocephalium

^f L'Art des accouch. sect. 653. pag. 97.

^g Ibid. pag. 108.

^h Crantz de utero rupto, pag. 30, 32.

phalon, have not only been born alive, but have lived for several monthsⁱ. I have sometimes seen such, and been surpris'd how they could get through the cavity of the pelvis. It is true indeed, the bones of the skull are generally very flexible in a hydrocephalon, and the whole head can be the more easily lengthened and fitted for passage. The reader may have recourse to what has been said upon this subject in sect. 1217.

Rouffetus ^k has wrote upon the method of performing the Cæsarean operation, which treatise being written in *French*, is not easily to be met with; but *Casparus Baubinus* has translated it into *Latin*, and it is to be found in the collection of the *Gænicii*. All particulars relating to the Cæsarean delivery are found collected in *Caleb* and *Heister*^l. To these we may add what is to be found in *Levret* * concerning the Cæsarean operation.

S E C T. MCCCXVII.

DIFFICULT delivery happens through the fault of the child when it is without motion, dead or placed in such a manner, as to close the passage against itself.

We are now to consider those causes of difficult delivery, which proceed not from the mother, but the child itself.

It appeared above, that the principal force by which the child is driven out, springs from the strong power of attraction with which the womb is endued, and the powerful efforts of the lying-in woman towards the latter end of her labour: the foetus does not seem to contribute much by its strength, excepting that by the motion of its limbs, it irritates the womb, and makes it contract itself still more.

G 3

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ⁱ Ibid. in notis.^k *Ifr. Spachii*, pag. 476.^l *Institut. chirurg.* part 2. sect. 5. cap. cxiii. Tom. II. pag. 755. & seq.

* Suite des observations sur les accouch. labor.

artic. 9.

It is evident, from daily experience, that even dead foetus's may be forced out without much pain.

But the disadvantageous situation of the foetus in the womb is often the cause of difficult delivery: the situation of the foetus at the time of delivery, is looked upon as natural, when the top of the head with the orifice of the womb, dilating by insensible degrees, hangs over the vagina, so that the face looks towards the os sacrum of the mother, the occiput towards the bones of the pubis, the arms are fixed to the sides, and the feet elevated. The foetus had not such a situation all along, but acquired it during the last months of pregnancy, sometimes sooner, sometimes later. For before the head does not cling below, but above^m. When the head rolls downward, the foetus is then said to turn; in many, this happens about the eighth month, in some when they are upon the point of being delivered. Hence Hippocrates tells usⁿ, *Puer autem ubi circumquaque membranae disruptae sunt, siquidem suo momento in caput inclinēt, mulier facile parit.*

Quod si in latus transversus aut in pedes prodeat (id enim saepius contingit, si illuc momentum vergat, vel propter uteri amplitudinem vel si mulier in ipso partus dolore primum non quieverit; si sic inquam prodeat difficulter pariet mulier. Jam vero ex his plurimae vel ipsi foetus vel una etiam cum suis foetibus matres perierunt:

“ But if the child when the membranes are broken
 “ on every side, by its own weight, leans on its head,
 “ the woman will be delivered with ease. But if it
 “ should come out transversely by its side or by its
 “ feet, for that often happens if the weight should
 “ lean to that part, either on account of the size of
 “ the womb, or if the woman has not first rested
 “ during the pangs; I say, if it should come out in
 “ that manner, the woman will be delivered with
 “ difficulty. From these causes, many women and
 “ many

^m Noortwyck de utero gravido, pag. 20^o.
 puer. cap. 11. charter, Tom. V. pag. 324.

ⁿ De natur.

“ many infants, and often both mothers and infants
 “ together, have perished.” In another place °, he
 pronounces delivery to be in like manner difficult, if
 the foetus should lie transversely in the womb, or
 come out by its feet : he speaks of its coming out by
 the head as a great advantage : his words are these,
Ut enim si quis in lecythum angustæ oris olivæ nucleum
immittat, hunc transversarium educere non facile est ; sic
sane mulieri est gravis affectio, ubi foetus transversarius
fuerit ; etenim ipsum exire perarduum : grave vero etiam
est, si in pedes prodierit et plerumque aut matres aut pu-
elli aut ambo, pereunt. Est autem et hæc magna causa
cur non facile exeat ; si mortuus aut sideratus aut dupli-
catus fuerit : “ For as when a person puts an olive-
 “ kernel into a narrow-mouthed phial, it is not easy
 “ to bring it out transversely ; in like manner, a wo-
 “ man is in a bad situation when the foetus is trans-
 “ verse ; it is a hard matter for the foetus to get out :
 “ it is bad likewise if it should come out by the feet ;
 “ for in this case, either the mother, the child, or
 “ both perish. There is also another cause which
 “ renders its coming out difficult ; namely its being
 “ dead or benumbed, or doubled.

It is now generally acknowledged, that the trans-
 verse position of the foetus in the womb, is a cause of
 difficult delivery ; but if it comes out by the feet,
 the midwives almost look upon the delivery as natural
 and easy ; and they are often successful even in diffi-
 cult deliveries and when the position of the child is
 disadvantageous, if they can but take hold of its feet,
 and so pull it out of the womb. Nor is the delivery
 considered as very difficult, if the doubled child
 comes out by its posteriors, provided it is not too
 brawny.

The foetus in the mother's womb is capable of
 motion, and as long as it is not fixed in the cavity of
 the pelvis, either by the head or any other part, it

G 4

may

° De mulier morb. lib. 1. chap. 31. charter. Tom. VII:
 pag. 748.

may offer sometimes one part of the body, sometimes another to the fingers of the man-midwife. This has been remarked by *Deventer* ^p, and he gives us to understand, that such moving foetus's seldom come forth properly turned, but generally lie transverse in the womb; and then the humours being gathered, either nothing at all is felt, or sometimes the different parts of the foetus successively, the hands, the feet, the back, &c. *La Motte* ^q was called to a woman in labour, who thought the time of delivery just at hand; he found the mouth of the womb dilated to the size of an imperial piece; the pains were increased, the humours were gathered, and he could easily touch the head of the child with his hands; he was therefore of opinion that delivery would soon follow; but the pains ceased, and the same day in the evening, returned with great violence; the mouth of the womb seemed to be greatly dilated, and the membranes which contained the humours, seemed to be upon the point of bursting. The pains ceased again, and for thirty-five days she was tolerably well; she then began to bring forth again; but the head of the foetus could no longer be felt, nor any other part; and the humours having burst through the violence of the pains, and *La Motte* having without difficulty, got in his whole hand as far as the wrist, at last came to the foot and the hand of a very brawny and strong foetus, and brought it out by the feet, not without difficulty, on account of its bulk. Hence he justly concludes, that foetus's do not continue in the same posture, even after they have changed their antient position by the sinking down of the head.

We read in scripture ^r concerning *Thamar*, who was pregnant with twins, that, “ The one put out
“ his hand; and the midwife took and bound upon
“ his hand a scarlet thread, saying, this came out
“ first.

^p Nov. lum. obstetric. cap. 40. pag. 176.
accouchm. liv. 4. observ. 374, 570.

^q Traite des
^r Genes. cap. 38.

“ first. And it came to pass, as he drew back his
 “ hand, that behold, his brother came out; and she
 “ said, how hast thou broken forth? this breach be
 “ upon thee: therefore his name was called *Pharez*.
 “ And afterwards came out his brother that had the
 “ scarlet thread upon his hand; and his name was
 “ called *Zarah*.” But the fact is, that of twins, each
 sticks to its peculiar membrane of the amnion, and
 that they are rolled up in the chorion which is com-
 mon to both; but it seems to be far from impossible
 that the amnion may be broke in the womb by the
 motion of twins, especially during the pains of deli-
 very, and then the twins may stick to the same mem-
 brane. Moreover, the celebrated *Mery*^s shewed the
 royal academy of sciences, twins who were wrapped
 up in the same membrane. Medical history affords
 us numerous instances of foetus’s grown together,
 who should certainly have dwelt in the same hollow
 membrane; besides we find that many masters in the
 art of midwifery, have laid down cautions to be ob-
 served in the turning of foetus’s when they are to
 be pulled out by the feet, lest the several feet of the
 twins should be taken and pulled together, and the
 delivery instead of difficult, rendered impossible.
 What we read of in sacred history is hereby con-
 firmed.

But when the foetus is placed without the womb,
 then delivery can never be effected by the usual me-
 thod. It has been observed above, that in a difficult
 delivery, the foetus sometimes sinks into the abdo-
 men of the mother, the womb being burst. But ex-
 perience shews, that foetus’s have sometimes been
 conceived without the womb, in the Fallopian tubes
 and in the ovarium, and that in those places, it has
 grown to the usual bulk. A woman was six times
 happily brought to bed, and becoming pregnant the
 seventh time, was very well for six months: but in
 the beginning of the seventh month, she suffered a
 violent

^s Acad. des sciences, 1693. memoir. pag. 116.

violent hæmorrhage of the womb : not long after a yellow, foetid ichor run out, and she began to feel a troublesome pricking in the vagina ; some bones of the foetus were extracted by the surgeon, and afterwards more : but still the skull was found by the touch to be entire, nor did there seem to be any hopes of its coming out by the opening observed in the lateral part of the vagina, unless the cohesion was dissolved by the rotting of the bones. Recourse was had to many remedies in vain, and the wretch, worn and destroyed by purging, vomiting, and various sufferings, died. The corps being dissected with art, it appeared that the Fallopian tube on the right side being swelled to a sac, contained the remaining bones of the foetus : the womb was found whole and in good condition ^t. We are informed likewise that it is not very uncommon for foetus's to be conceived and to grow without the womb ^u ; we likewise meet there an extraordinary case of a foetus found not in the cavity of the Fallopian tube, but in a sac formed by the external membrane of the tube : near the navel string there grew a tumour which oozed forth a serous matter ; this being dissected, the foetus was taken out, but it was then half rotten. The unhappy patient could however by no art be saved, but died on the eleventh day after the dissection of the tumour. It was remarked, however, that she had no milk in her breasts during the whole time of pregnancy. Many examples of the same nature are to be met with ^x.

But we read that a foetus was once formed in the ovarium itself, which being broken by its increase, was found in that condition, with a considerable quantity of blood poured out into the abdomen, the Fallopian tubes and the womb being entire ^y.

It

^t Anton. Benevoli dissertat. & 104 & seq.
scienc. 1714. hist. pag. 29.

& 1748. in 4 memoir. pag. 108, & seq.
transact. abridg. Tom. III. pag. 212, &c.

^u Academ. de
hist. pag. 27.

^y Philosoph.

It is obvious that such foetus's conceived without the womb, can be brought out only by the Cæsarean operation. But the diagnostic symptoms of such a case are not easily to be had; yet no wise man will advise this operation, or undertake it without being absolutely certain that it is indispensably necessary. So that this is discovered in the corps of the dead mother, or an abscess being grown in several parts, and then opened, the whole foetus or the bones of the rotten foetus loosened from each other, are brought out; many cases of this nature occur in medical history.

S E C T. MCCCXVIII.

THE child is known to be dead if it be motionless; if the umbilical arteries are perceived to be at rest in the navel-string, especially near the body of the child; if foetid excretions are voided; if the weight be considerable; if there be a tenesmus in the case; a syncope; if the hair stand on end; if the breath sink, the colour be livid; if the patient does not bring forth long after the humours are run off; if the epidermis quickly separates from the skin; if the skin of the foetus be flaccid, easily separated; if the bones be soft and easily moved.

We come now to treat of the symptoms by which the foetus may be known to be dead. Before this can be known, the physician who attends at a difficult delivery should think of preserving both the mother and the child; but when the foetus is dead, it may be treated roughly, and the mother's safety alone, attended to. All symptoms therefore are to be duly weighed, and it is to be carefully considered what degree of certainty they have.

If it be motionless.] Though it is certain that the foetus moves itself in the womb, there here occurs a great diversity not only in different women, but in the same woman: I have known many matrons who have thought that they would be delivered of a dead child, or at least of a very weak one, when they could scarce feel any motion, and yet a brawny vigorous child was born. Pregnant women are greatly uneasy, if after having felt frequent and violent motions before, they at the time of delivery feel scarce any. But if in a difficult delivery, when the humours have gushed out, the womb should contract itself very much, and fold the body of the child very closely, scarce any motion will be perceived: the child, by being thus narrowly confined, may be rendered dull and heavy, or may be seized with a fainting fit, &c. whence it is evident that this symptom alone is doubtful.

If the umbilical arteries, &c.] In natural delivery, when the head of the child gradually dilates the orifice of the womb having forced the humours forward, and fills the mouth of the womb with the burst humours, the navel-string cannot be touched: so that this symptom would chiefly have place, whilst the navel-string comes out, together with the head or some limb of the foetus, or even when it slips out alone; which generally happens whilst the child lies transversely in the womb. Then if no pulse of the arteries be felt in the navel-string, it may be justly concluded that the child is in the most imminent danger; yet its death cannot be inferred with certainty, even from this symptom, as the foetus might languish, and yet afterwards come to itself: thus frequent observations shew, that children, who upon turning have been dragged out by the feet, may live, though no motion of the arteries be any longer perceived in the navel-string which had fallen out.

If foetid excretions are voided.] No one can deny that stinking excretions prove a corruption begun,

for

for this reason it is a bad symptom, but it does not always prove the foetus to be dead: for they may spring from another cause; wherefore it has been justly observed by *Manningham*^z, *Uteri excretiones foetidae non semper infantem mortuum indicant, quum à grumis sanguinis diutius retentis corruptis fieri possint*: “That the foetid excretions of the womb do not always shew the foetus to be dead, as this may be occasioned by the clotted and corrupt blood being too long retained in the womb.” For if blood should run out of the opened vessels of the chorion or the placenta, and yet should not flow freely thro’ the mouth of the womb, what is left of it will grow clotted, and will soon rot when approached by the air: this is likewise observed after delivery, whilst clotted blood which has been collected in the womb, and sometimes in the vagina, comes out with a very noisome stench. It has moreover been admirably observed by *Mauriceau*^a, that it sometimes happens that of twins one dies and rots, whilst the other is alive and well. He assures us that he was witness of such a case in the wife of a counsellor, who said that she felt the motion of a living foetus, whilst the midwife who sat by her affirmed it to be dead and rotten: they both spoke the truth; for the first of the twins that came out was dead, and became a mass of corruption, the other was alive and vigorous: but a stink is smelt if the foetus voids its excrements whilst still in the womb. *Mauriceau*^b moreover inveighs severely against those who look upon the excretion of the foetus’s filth as an infallible sign of its death, which is altogether false, as this often happens when the foetus comes out by its posteriors, and often too when the child, on account of its disadvantageous position, should be turned in the womb, that the man-midwife

^z Art obstetric. compend. pag. 23.

^a Traite des malad. des femm. gross. Tom. 1. liv. 2. chap. 12. pag. 277.

^b Ibid. 278, 279.

wife might have it in his power to draw it out by the feet.

If the weight be considerable.] This symptom chiefly takes place when the child has been dead sometime before delivery: for if the woman with child has for some days perceived no sort of motion of the foetus, and at last perceives it when she turns to one side or the other; and if the unwieldy weight rolls this way or that, there is then sufficient reason to infer the death of the foetus. However, if the foetus had already entered the cavity of the pelvis, and should die whilst sticking there, it is evident that this symptom does not then take place, as the foetus in such a case could not change its situation; especially if the womb should contract itself, the humours having flowed out. *Hippocrates* took particular notice of this^c, *Quum mortuus foetus fuerit, tum aliis signis conjicere licet, tum etiam jubere oportet, ut modo quidem in dexterum latus jaceat modo etiam in sinistrum convertatur. Dilabitur enim foetus in utero, quocumque se vertat mulier, velut saxum aut aliud quidpiam si mortuus fuerit; Et pectinem frigidum mulier habet, quod si vivat, pecten calidus est Et totus quidem venter cum reliquo corpore decedit, nihilque in eo absque reliquo corpore dilabitur:* “ With regard to the time of
“ the foetus’s death, it may be conjectured from
“ other symptoms, and the physician should more-
“ over order the patient sometimes to lie upon her
“ right side, sometimes to turn to the left. For if
“ the foetus was dead, it would roll about in the
“ womb like a stone, which ever way the woman
“ should happen to turn herself, and the hair about
“ the privy parts would be cold. When the foetus is
“ alive, the hair about the privy parts is warm, and no-
“ thing falls in the belly except the whole fall together.”

If there be a tenesmus in the case, &c.] The living mother, even unknown to herself, sometimes makes an effort to drive out the body which is hurt-
ful

^c De superfœtatione, cap. 4. Charter. Tom. 7. pag. 862, 863.

ful to her. This tenesmus is not however always observed: the patient is often observed to faint, and her hair to stand on end; and if the dead foetus should begin to rot in the womb, then a stink is smelt; but a particular change may be remarked in the face of the pregnant woman when she carries a dead foetus: she looks pale and livid; her lips in particular are of a livid hue; there is an expression of sadness in her eyes, nor do they shine with their wonted brightness, though the pregnant woman should be ignorant of her melancholy condition. A remarkable instance of this I observed in the noble matron, of whom mention has been made in Sect. 1306. who was twice delivered of a dead child, whose navel-string was tied into a knot in the womb: her countenance appeared sad, though she told the standers-by that she was in good spirits. In two days her breasts fell; she afterwards began to languish, and to be seized with a slight fever; and this continued till the dead foetus was taken out. Thus this lady looked as pale at the approaching death of the child she bore in her womb, as the willows with which gardeners prop weak trees, in the beautiful description of *Vanierius* ^d:

*Ut mors cæca rapit sæpe optima quæque, salignum
Exstinctis tilia atque ulmo mirabere truncum
Fundere pallentes vicino funere ramos.*

If the patient does not bring forth long after the humours are run off.] In that case the foetus sticks in passages extremely narrow, and is strongly compressed by the contracted womb, whereas it before swam in the amnion's fluid, and was free from all pressure. It is then universally acknowledged that the foetus is in danger of death; but this symptom is by no means infallible, as many observations shew that

^d Præd. rustic.

that foetus's have for several days stuck in these passages, and yet come out alive at last.

If the epidermis, &c.] In Sect. 427, and 429. where we treated of the gangrene and mortification, it was observed, that whilst part of the body tends to death, the epidermis, separated from the skin, is puffed into bubbles, full of a watery humour. Skillful anatomists know, that when putrefaction is begun in the body, the epidermis is easily separated from the parts beneath; which artifice they often make use of, in order to examine and demonstrate the structure of the epidermis. Hence it is evident that this symptom is of great consequence when the death of the foetus is in question.

Much more, if the skin of the foetus is flaccid and easily separated. For a softness, a flaccidity which does not resist the touch, be it in what part of the body it will, is reckoned amongst the symptoms of a formed gangrene (see Sect. 427. 4) but if to this be added a skin easily separated (see Sect. 429. 4) it is not looked upon merely as an indication of gangrene or death begun, but of mortification or death compleat. If in a difficult delivery a child should for a long time stick with its head foremost in the orifice of the womb, then that part of the head which answers to the opening of the orifice of the womb, is raised into a tumour in case it lives: but when there is no such tumour in the case, or when after rising it immediately sinks and grows flaccid, the midwives generally despair of the life of the foetus: *Si caput infantis in exitu hæreat, cum non sit tumefactum, est, cur mortuum credas*: “ If the head of the infant should stick in coming out, without being swelled, there is reason to think it is dead.”

If the bones be soft and easily moved.] This is to be understood of the bones of the foetus's head: for it is well known that the skull of a child just born is in part nothing but membrane. As long as that

mem-

membranous part is stretched by the encephalon contained in it, the head resists: but when all parts sink after death, the membranes subside, the bony parts of the skull in the fœtus move to and fro, and easily approach each other; for which reason this too is looked upon as a bad symptom. Whence it happens that the fœtus being dead, and the bones soft, the head passes with the greater ease; but a difficult delivery is not always rendered easy thereby: *infantis mortui caput, e corruptione emollitum non æque ac vivi exitum humeris in partu conciliat*: “For the head of a
 “dead child being become soft by being reduced to cor-
 “ruption, does not, like that of a living child, help out
 “the shoulders.” Thus it often happens that midwives in striving to bring out the child by the head, pull it off, and when it is left in the womb, it is not easily got out.

As it is evident from what has been said, that all these symptoms do not afford a full certainty of the death of the fœtus, it follows that great caution is required, lest a living fœtus should be treated as a dead one. In *Hippocrates* we read of a woman^s who in the fourth month of her pregnancy, swelling with an anasarca all over her body, was at the same time troubled with so terrible an asthma, *Ut decumbere non posset, sed si qua somni incideret opinio, cum sedendo caperet*. *Fere sine febre erat, fœtusque ex longo intervallo non movebatur, ac veluti ad corruptionem tendebat*: “That she could not lie down, but whenever she
 “had any disposition to sleep, slept sitting. She
 “was, generally speaking, free from a fever, and
 “the fœtus for a long time did not move, but as it
 “were had a tendency to corruption.” This asthma lasted for the space of two months; she afterwards grew better by the use of beans tempered with honey, an electuary of honey and Æthiopian cummin taken in wine. Afterwards having by the cough thrown up much mellow, pituitous, and white matter, the difficulty of breathing ceased, and she was

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^s Ibid. ^s Epidemic. 7. ægrot. 11. Charter. Tom. 9. pag 557.

delivered of a girl. Now, as there is no mention made either of abortion or a dead child, it seems highly probable that she brought forth a living girl, though the motion of the foetus was not felt in the womb, and the mother was afflicted with so severe a disorder. Unskilful physicians would have attempted to remove the stagnation of watery humours by violent remedies, and would have neglected the foetus. *Hippocrates*, by using mild remedies, eradicated the disorder, and saved the child.

Some cases have already been mentioned of living foetus's cruelly torn with hooks, because they were thought to be dead. Many cases of the like nature are to be met with in medical history. I shall alledge but one example more, because *Deventer* himself^b, notwithstanding all his skill in midwifery, acknowledged that such a misfortune befel him. He was sent for to a neighbouring village to attend a woman who had been many days in labour, though the child was in its natural position: in two days time neither the midwife nor the mother could perceive any motion of the child; they were therefore convinced that it was dead; and *Deventer* acknowledges that he could form no other conclusion; being therefore wholly intent upon saving the mother, he treated the child very roughly; yet it came at last alive into the world, and lived a few days. There were two or three lumps on its head, occasioned by the too great compression it had suffered, which gave him particular concern. He however adds what follows; *Fateor hunc errorem totidem inde annis documento mihi et fuisse et fore posthac, dum spiritus hos regit artus, ne unquam infantem ut mortuum tractem, testimonio parturientis aut obstetricis persuasus: imo de proprio sensu diffido, nihil raturum habens, præter supremæ capitis cuticulæ dissolutionem, quæ quidem ibidem haud facile dissolvitur, quia mediantibus capillis adhæret; neque infantem ulterius sine maximo labore tangere licet:* “ I own this mistake

“ has

^b Nov. lum. obstet. cap. 32. pag. 140, & seq.

has been, even after so many years, a warning to me, and will continue to be so as long as I live; so that I will never suffer myself to be over-persuaded, either by a woman in labour or a midwife, to treat a foetus as dead: nay, I am diffident even of my opinion, thinking no symptom infallible but the dissolution of the last skin of the head, because it sticks to the intervening hair; nor can the touch proceed any farther without great difficulty." He gives us to understand, that those difficult cases happen then chiefly when the head of the foetus is too big, or the pelvis too narrow. But as midwifery has received new improvements from new inventions, we may have good hopes even in the most difficult cases, as is evident from what has been said in sect 1316. He tells us that the same difficulty may take place, *Si propter uterum obliquum infans in meatu, instar cubiti incurvati hæret*: "If the child sticks in its passage like the crooked elbow, on account of the obliquity of the womb." But we shall treat of this subject in due time. Therefore, now that the art of midwifery is more compleat and more perfect than ever, we may reasonably admit the conclusion of Deventerⁱ, *Istiusmodi igitur infantes, de quibus hic sermo est, sive vivi sive mortui, sola manu obstetricante, non autem instrumentis vulnificis, traducendi sunt; quoniam ægre uti dictum est, certo cognosci potest, vivine an emortui, sint*: "Such children as are here spoken of, whether living or dead, should be taken out of the womb only by the hand of the midwife, and not by any instrument capable of hurting; because, as has been said already, one cannot easily be positive whether they are living or dead." No one can repent of having, in a difficult delivery, treated a dead child as though it were alive; but what stings of conscience, must torment those (*perpetuum quatiende animo portore flagellum*, 'the torturing mind forever lashing them) who have rashly dragged out a living child torn and mangled with hooks!

ⁱ Nov. lum. obstet. cap. 32. pag. 142:

S E C T. MCCCXIX.

AS soon as the foetus is known to be dead (see sect. 1318) it should, for fear of the mother's being seized with a gangrene, a syncope, or death, be taken out, and that by the feet, if possible.

As long as the dead foetus clings to the closed membranes, it is not quickly corrupted; but when the membranes are broken, and the humours have run out, the air has a free passage; and then the foetus quickly rots in the warm and humid womb. But whilst the womb is on every side contiguous to the rotten body, there is danger of its being very much injured, and very bad consequences may follow from the putrefaction imbibed. The abdomen of a drowned animal having burst in the midst of summer, exhaled so horrid a stink, that I almost fainted in passing by it, though naturally of a good constitution, and at that time in perfect health and the vigour of youth; we should not therefore be surprized at a syncope's being the consequence of the rotting of a foetus's body in the womb of a living mother. From the putrefaction imbibed, a malignant fever may arise, which continuing after the dead foetus is taken out, may put an end to the mother's life. Wherefore *Manningham*^k wisely reminds us, *Mulieres quæ mortuum & corruptum, infantem edunt febre interim continuè laborantes, post partum, paucis interpositis diebus, fere moriuntur*: "that women who are delivered of a dead and corrupt foetus are generally seized with a continued fever, and die a few days after delivery." Wherefore all are agreed that the dead foetus should be taken out as soon as possible. *Mauriceau*^l observes, that when the foetus has been dead for any time, the

pains

^k Art. obstet. comp. pag. 22.

^l Traite de malad. de femm. gross. &c. liv. 2. cap. 30. Tom. 1. pag. 342.

pains cease, or become so faint, that they are not capable of forcing out the foetus. In that case he advises to excite the efforts to delivery by a strong clyster; and if that should not succeed, the dead body of the foetus should be pulled out by the hand of the midwife, rather than the ecbotic remedies (medicines used to help delivery in hard labour) above mentioned should be used; for as these are sharp and warm, and may prove very pernicious or quite trifling, no prudent man would place any confidence in them.

It is now thought the best method to pull out the dead foetus by the feet, having first turned it, if it was in a different posture before; this turning shall be treated of in the next chapter. But when the head is wedged in, it cannot be pushed back; wherefore in this case *Mauriceau*^m advises to pull it out with hooks: this is now happily effected by *Levret's* pincers, or *Roonbui's* lever, and with much more safety than by the terrible apparatus of hooks. At the same time care is taken of the man-midwives reputation, and malicious midwives prevented from saying, as is very common with them, that he killed the child, which he pulled out dead, with hooks. What great improvements have been made in this article of pulling out dead foetus's, will appear evidently from a view of the method recommended by *Hippocrates*ⁿ for this purpose. For he ordered the hands and shoulders to be cut off, the breast to be cut in two up to the throat, and the ribs to be beat down whilst the foetus remained in the womb. In another place^o he directs that the person who does the office of midwife, should let a nail grow upon the middle finger, to break the shoulders from the neck, and tear up the belly. He then directs to take out the guts, and to crush the soft ribs; that the body of the foetus being reduced to a heap, may be the more

H 3 easily

^m Ibid. pag. 344. ⁿ De mulier. morb. lib. 1. cap. 69.
Charter. Tom. 7. pag 769, 770. ^o De superfœtatione, cap. 3.
ibid. pag. 862.

easily pulled out. We meet with directions of a like nature, or even still more cruel, in another place ^p.

Whilst the dead foetus, being taken hold of by the feet, is drawn out, it sometimes happens, especially if putrefaction is begun, that the whole trunk of the body being pulled out, the neck is broke off, and the head alone left in the womb. In that case the mouth of the womb generally contracts itself over the head which remains, and ascends with it, and that so high, that the celebrated *Simson* ^q informs us, that he has sometimes been obliged to thrust in his hand the length of a foot and more, before he could touch the head of the foetus. When the head is so far distant from the privy parts, it would be dangerous to make use of hooks; and if the bulk of the head should exceed the cavity of the pelvis, then by taking it out, the soft parts which lie between the head of the foetus and the bones of the pelvis are crushed; whence dangerous consequences are to be feared. He therefore thought it would be of service to diminish the bulk of the head, having taken out the encephalon, or contents of the skull, and either separated the bones of the head or pressed them together. That he might be able to effect this with safety, he invented the ring ^r to which the knife is fastened. This ring he applied to the second part of the fore-finger, so that the edge of the knife might look towards the palm of the hand; having then bent the finger at the middle joint, the edge of the knife becomes parallel to the first part of the finger, and is in that manner introduced together with the hand; the head is taken hold of by the thumb and the other fingers, then the forefinger is extended, and the knife infixed in the head, and thus an opening is made into which the fingers can be thrust, the skull evacuated, and the bones taken out. He has observed, however, that it was not always an easy matter to separate the bones

^p De foetus in utero mortui exsectione, Charter. Tom. 12. pag. 550.

^q Medic essays and observat, Tom. 5. part 1. pag. 446.

^r Ibid. tab. 4. fig. 1. pag. 468.

bones from each other, but that this may be brought about by waiting a little time. By this method he evacuated a skull, and loosened one of the bones of the forehead, yet could not get out the head. After that the unhappy woman in labour had been quite wearied out, and *Simpson* himself had discontinued his operation for three hours, he then could easily separate the bones from each other.

These are the chief remedies which are to be applied in this melancholy case.

But if the dead foetus cannot be got out, it will rot; it will infect the parts next it; the putrefaction will be sucked in, and the mother's humours horridly corrupted. Thus after long and severe sufferings, death will sooner or later follow. For this reason *Hippocrates* expresses himself in these terms: *At vero, si cui puer immortuus fuerit in utero, neque exierit, humido existente utero, etiam nullum humorem continente, imo quum siccatus fuerit uterus; primum quidem puer intumescit, deinde colliquescent & putrescent carnes, ac foras effluunt, postremo vero ossa prodeunt, fluorque aliquando illam prehendit nisi prius moriatur:* " But if a
 " child dies in the belly of a woman, and does not
 " come out, the womb being then humid, or even
 " when it contains no humour, and when it has been
 " dried: the child at first swells, then its flesh dis-
 " solves, grows rotten, and falls out; last of all, the
 " bones come out, and the patient sometimes makes
 " an evacuation by the womb, if she does not die
 " first." It is generally known, that whilst a body rots, it swells chiefly about the abdomen, as *Hippocrates* has justly observed. If the flesh, being quickly dissolved into putrid matter, runs out, and care has been taken by proper remedies to prevent the mother's humours from corrupting, such have sometimes escaped, the bones being successively driven out, either by the vagina or the anus, after the ligaments have been dissolved by the putrefaction; the

H 4

gan-

gangrene which consumed part of the vagina and of the rectum of the woman in labour, having first grown and been separated; whence the patient is, during the remainder of her days subjected to the inconvenience of voiding her excrements by the vagina. We meet with such a case ^t of a woman, who having lain down in the 5th month of her pregnancy, was seized with a fainting fit; which was followed by a violent fever, and a copious hæmorrhage of the womb accompanied by efforts to delivery: she recovered in such a manner, that she was able to work as usual; the belly neither increased in bulk nor diminished: she then felt the pains which are always attended by an hæmorrhage. Eight months being elapsed, all these evils increased, and they ended by a copious purging, attended by a cadaverous smell, with so great a weakness in a woman, 'till then of a robust constitution, that her life was despaired of. After a few days, the limbs of the dead child began to come through the anus, first the arms, then the other limbs; so that in the space of eight days, every part of the foetus had passed through the anus, except the lower jaw-bone which came out afterwards. She however recovered thoroughly from so great an illness.

Sometimes dead foetus's have come out of the umbilical region bit by bit. *Bartholinus* ^u tells us, that he observed this in a woman who was thought to be with child of twins. Delivery approaching, nothing appeared after two days labour; at the end of six weeks he thought that he again felt the foetus's move; this seeming motion continued during the space of five years, but in such a manner that he could perceive them to be insensibly pressed together and diminished. The navel afterwards swelled, and burst, on the first days limpid water, soon after blood and purulent matter, run out with some few bones.

Thus

^t Acad. de scienc. in 4to, l'an. 1746. Hist. pag. 43, 44.

^u Epistol. medicin. centur. 4. tom. 4. pag. 99.

Thus through a hole open in the navel for seven or eight years, several little bones came out by degrees; there was then formed another hole below the navel, from which the other bones of the child were every day forced by the efforts of nature, with great pain to the mother.

Bartholinus informs us, that he preserved several of these little bones in his library. Observations of the like nature have been made by others*. It has been thought, and not without reason, that foetus's either coming out entire, or brought out bit by bit, have stuck on the outside of the womb's cavity. A pregnant woman, the usual time of pregnancy being past, suffers a most violent labour, and yet is not delivered of her burthen; she is afflicted with a fever, pains in the abdomen, belly-aches, pimples about the ventricle and guts, and with other terrible symptoms: afterwards there appear little bladders over the navel, which shew that a gangrene is approaching; which being burst, a great quantity of humour runs out, and then part of the navel-string corrupted with a great stink. After ten days the left hand of the foetus came out the length of a cubit, through the common coverings of the abdomen, which were then seized with a gangrene. After two days, the abdomen being cut, a foetus of a considerable size was brought out entire, but stinking: the placenta was got out with greater difficulty, as it stuck not to the womb, but to the Fallopian tube, or the ovarium, on the left. However, in the space of nine months this woman recovered perfectly of so dreadful a disorder, and she shewed the physicians and surgeons who had attended her, her belly closed up with a deep scar, but without a navel†. I have singled out this case, because I was intimately acquainted with all the physicians and surgeons by whom the patient was attended, and could have no doubt of their skill and candour.

Though

* *Medic. Essays*, Vol. 5. part 1. pag. 442.

† *Cornel. Trioen. observat. medic. chirurg fascic. pag. 64 & seq.*

Tho' the carcase of a foetus left in its mother's body generally rots, and afterwards often comes out bit by bit in several places, yet some extraordinary cases shew that it has sometimes remained uncorrupted for several years, and been troublesome only by it's bulk and it's weight. Thus we read ^z of a woman of the province of *Lyonnois*, who dying in the 68th year of her age, had carried in her womb a dead foetus for twenty-seven years. She had lived married, but barren for many years, and in her fortieth year perceived the symptoms of pregnancy: her monthly evacuations had ceased, she had long been troubled with a depraved appetite, and longing for things not fit to be eat, she felt the motion of the child at the usual time, her breasts swelling with milk; her labour at last began with a suppression of urine for some days, which afterwards flowed from her in great plenty; it was likewise thought that her humours had burst out, she having at the same time voided a lump of coagulated blood. Afterwards her breasts fell, and either little or no motion of the child was perceived; no delivery ever followed: the wretch was bed-ridden for three years; she lingered out the rest of her life, complaining of a swelling, of hardness, and of a heavy weight in her abdomen, according to the various motion of her body, as she lay down on this side or on that: at the same time her appetite was faint, and she endeavoured to whet it with vinegar and the juice of unripe grapes. She at last died, after having suffered all this misery, during twenty-seven years. Skilful surgeons having opened the corpse, found that the womb was shrivelled, party-coloured, and at the same time rough and hard to the touch. So hard a womb was not without difficulty dissected; in its cavity was found a foetus transversely placed, and folded into a circle. The surgeons, astonished at so extraordinary a sight, sent for

^z Maur. Chordæi Rhemi, comment. 7 in lib. 1. Hippoc. de mulier. apud Spach. in Gynæc. pag. 740.

for physicians to be witnesses of this phænomenon, and to pass a judgment on it: but that the whole might be more conveniently examined, they pulled out the whole bulk with their hands and with hooks, and carried it home: this could not be done without the exertion of great force. In this hard womb they found the foetus at the right hip, the buttocks and part of the back bone entirely grown to the hollow surface of the womb, the bones of the head were thin but firm, they shone like horn, the skin of the head was hairy in many places; the left fist was so strongly clinched, and the tops of the fingers so stuck to the palm of the hand, that though they appeared to be distinguished from each other according to their order, they had in fact grown into one and the same stony body. The right arm extended its hand towards the navel, that hand had by the surgeons, inadvertently been cut off, and left in the mother's womb: *Facto ex oculis et tactu judicio, totum istud opus Phidiæ alicujus esse dixeris, qui vel ex ebore vel ex marmore, mature ætatis embryi absolutissimam imaginem expressisset, maxime cum in ea duritie corpusculi moles non concidisset, imo cum cute nitida integram suam* συμμετρίαν ἀποδυσχηρίαν, *retinuisset. Partes autem internæ, viscera nempe omnia cor & cerebrum, habebant naturaliter, eo dempto, quod ultra modum induruerant (minus tamen quam externæ) ita ut hodie exertum illud corpusculum neque putredinem minetur; neque teredinem.*

“ Upon forming a general judgment by the sight
 “ and touch, you would declare the whole to be
 “ the work of a *Phidias*, who had made a most com-
 “ plect figure of a full grown foetus either of ivory
 “ or marble, especially as the body being of such an
 “ hardness, did not fall into decay, but retained not
 “ only a shining skin, but its whole symmetry
 “ and compactness. But all the internal parts, the
 “ bowels, the heart and the brain, were in their na-
 “ tural itate, excepting that they were grown ex-
 “ tremely hard, less so however, than the external
 “ parts;

“ parts ; so that that body being still shewn, does
 “ not appear to be in danger, either of rotting or be-
 “ ing worm-eaten.” As a thousand witnesses have
 seen and touched this foetus, there can be no doubt
 concerning the fact. A plate of this stony foetus, of
 the Province of *Lyonnois*, is to be seen^a, but it is a
 very indifferent one.

We meet with another history of a foetus^b that lay
 hid in the mother's belly for 46 years. The woman
 in the 48th year of her age, felt all the symptoms of
 pregnancy, and at last underwent the pains of deli-
 very during seven weeks ; these upon the application
 of the bath discontinued, but the abdomen remained
 swelled and troublesome, on account of its weight,
 though there was no pain in it. She afterwards was
 delivered of two children in perfect health. She
 lived forty years longer after the death of her hus-
 band, and as she always thought herself with child,
 she was desirous that her swelled abdomen should be
 cut open after her death.

The surgeon cut up the corps awkwardly enough,
 and pulled a pretty large globe out of the abdomen ;
 this he opened with a stroke of an ax, as it was a
 little of the hardest. This globe was left in the
 same state as it was to be kept in his serene highness
 the duke of *Wirtemberg's* closet. But the celebrated
 professor *Camerer*, could through the cleft made
 with the ax, discern the foetus contained in this
 globe ; its head was deformed, and its breast very
 flat ; and though this foetus was still flexible enough,
 yet it did not stink. The cover which contained the
 foetus, appeared to be very hard, cartilaginous, and
 even bony in its whole extent, except in that part by
 which it stuck to a certain place of the abdomen ; for
 there the softness was greater, and it stuck to fat and
 red flesh. The celebrated *Camerer* justly appre-
 hended,

^a Maur. Cordæi Rhemi comment. 7 in lib. 1. Hippoc. de mulier.
 apud Spach. in gynæc. pag. 478.

^b Académ. de scienc.

l'an 1721. hist. pag. 43.

hended, that that foetus being conceived in one of the Fallopian tubes had grown there, when the mother was afterwards delivered of two children.

This foetus, being by the orders of his most serene highness the duke of *Wirtemberg* sent to *Paris*, was seen by the celebrated *Morand*^c, who likewise relates a history of a dead foetus that had been carried in the womb one and thirty years; in the same place there are many more passages very well worth reading concerning foetus's, which have a long time lain hid in the body of the mother.

S E C T. MCCCXX.

THE position of the child should be reduced to such a one, that there may be a possibility of pulling it out by the head, or rather by the feet, if that can be effected.

What the position of the child should be in a natural delivery, the reader was informed in sect. 1317, so that if the foetus be placed in such a manner as to shut the door against itself, then that position is to be changed and reduced to a natural one. Particular care should be taken never to give warm, stimulating potions in a delivery, whose difficulty proceeds from this cause: the woman in labour, the bystanders and the midwives, if they be unskilful, insist upon these. Yet it is certain, that the pains of delivery are so much the more dangerous, both to the mother and the foetus, as they are more frequent and more violent, if the foetus be so placed that it cannot come out. A prudent physician will rather give a gentle refreshing potion than one that stimulates; he will act in this manner, that he may appear to the querulous woman in labour to prescribe something, and thereby encourage her whilst he takes
proper

proper measures to alter the disadvantageous position of the foetus with a skilful hand. It is a great advantage to know by times, whether the foetus is badly placed. When in the natural situation, the foetus with its head foremost, pushes against the mouth of the womb; it is insensibly dilated during the efforts of the woman in labour, and the membranes placed before the head of the child begin to swell with gathered humours, and form a tumour round and tense, whilst the pains of delivery are felt, but more flaccid and weak, when the pains begin to remit. Thus the mouth of the womb is insensibly, and by an equable force more and more dilated, and disposed to happy delivery. Wherefore all who are skilled in the art of midwifery, advise not to break too quickly the humours which are just beginning to gather, the orifice of the womb not being then sufficiently dilated. For it sometimes happens in a happy delivery, that the foetus bursts out still shut up in its membranes. But when the humours have to such a degree distended the membranes, and the mouth of the womb has been to such a degree dilated, that the head of the child, which is behind the humours, can roll into the mouth of the womb, and fill its whole capacity, then the humours may burst out; which is easily effected if at the time of the pains, the midwife presses the swelling membranes with her finger, or gently twists them. But if these membranes should be extremely tenacious, they may be cut, but this should be done with caution, because, the humours bursting out, the head of the foetus soon follows. *Moschion*^a reckons it one of the causes of difficult delivery, if the membranes being too thin, are too quickly broke, and so that humour is poured out, which was prepared (*διὰ το ολίσθημα*) to lubricate and facilitate the passage of the foetus. *Mauriceau* and others have made the same observation.

But

^a Spach. gynæc. pag. 19, 150.

But if the womb be rightly placed, that is, if its orifice directly answers to the vagina, and if the humours are lengthened out and gathered in an oblong form, it is a sign that the child is disadvantageously placed, and is not disposed to come out with its head foremost^e. But when the head is not very remote from the orifice of the womb, then he gives the following direction: *Si invenerit uterum recte positum & humores in longitudinem expansos esse; si modo manum, modo pedem, aut etiam caput, aliquatenus tangere potuerit, tunc opportunum tempus non negligat, judicans, satis protuberare aquas, & tactu caput aliquatenus sentiens, ocius membranam unguibus confringat, & protinus digitis caput in ostium dirigat, obstaculis quibuscunque manus scilicet, pedis, funiculi umbilicalis, remotis; quod tum facile fieri poterit, quia satis spatii suppetit. Capite hoc pacto, in ostium inducto, non est quod obstetrix metuat, idem inde recessurum esse; humoribus enim effluxis, infanti in utero recto spatium non est, sese huc illuc vertendi; quia uterus statim contractus infantem undique comprimit:* “ If the midwife should find the
 “ woman rightly placed, and the humours drawn
 “ out in length; if she should be sometimes able to
 “ touch the hand, sometimes the foot, or even the
 “ head, then she should not neglect the opportunity,
 “ but concluding the humours to have swelled to a
 “ sufficient height, and partly feeling the head by
 “ her touch, she should, without delay, break the
 “ membrane with her nails, and should immediately
 “ with her fingers, direct the head to the passage,
 “ having removed all obstacles, such as the hand,
 “ the foot and the navel-string; which may be then
 “ easily done because there is room enough. The
 “ head being thus brought into the passage, the mid-
 “ wife need not apprehend that it will recede from
 “ it; for the humours having run out, the infant
 “ in the womb has not time to move this way and
 “ that; because the womb being immediately con-
 “ tracted,

“tracted, compresses the infant on every side.” Nay, when the humours have run out, the womb becomes so narrow, that it is with difficulty the child can be turned and brought to another position; whilst all the parts are dry; all those who have written upon midwifery, complain of this difficulty; and for this reason, they advise midwives to call a skilful surgeon to their assistance, if they think themselves unable to effect delivery expeditiously. For the foetus is in danger, and the woman in labour is weakened, if the turning of the child is not attempted till long after the humours have run out; and a greater force must be applied to the womb, when the position of the foetus is to be changed in it, at a time that it is contracted and dry.

It was the opinion of antient physicians, that the foetus in the womb was full of motion; for this reason they endeavoured to change the disadvantageous position of the foetus, and shook the woman in labour often and strongly. Thus *Hippocrates*^f, whilst he endeavoured to turn a foetus, that it might come out by the head in the natural way, gives the following directions: *Supinae reclinatae molle quiddam coxis substernere oportet, atque etiam lecti pedibus aliquid supponere, quo altiores a pedibus decumbentes esse queant. Sed et coxae capite sint altiores; nullum vero capiti cervicali subsit. Ad ea prospiciendum; quum vero retrusus fuerit fœtus & huc & illuc circumagatur, sublati lapidibus, pedibus lecti suppositis, et eo quod coxis subditum fuerat & lectum & coxas in pristinum statum restituito, capitique pulvinar supponito:* “Something should be
 “laid under the hips of the woman in labour as she
 “lies; something should be also put under the feet
 “of the bed, that the patient may be raised higher
 “towards the feet. But the hips should also be
 “raised higher than the head, and there should be
 “no bolster under the head. Care should be taken
 “of these things; but when the foetus is moved out
 “of

^f De mulier morb. lib. 1. cap. 63. charter tom. 7. pag. 769.

“ of its first place, and turned this way and that, hav-
 “ ing taken away the stones which were placed un-
 “ der the feet of the bed, and having removed what
 “ was placed under the patient’s hips, restore both
 “ the bed and her to her former state, and put a pil-
 “ low under her head.” It is evident that *Hippo-*
crates endeavoured in this manner to change the dis-
 advantageous position of the foetus to a natural one.
 It however seems doubtful, whether he meant to ren-
 der the position of the child natural, by the concus-
 sion caused by the removal of the props which were
 placed under the bed, or whether he thought this al-
 ready effected. For *Cornarius* refers the following
 words, καὶ κατὰ φύσιν καθίσταται to the foregoing, which
 relate to the position of the foetus; but *Foesius*
 and *Charterius* were of opinion, that they rather re-
 lated to the patient’s being restored to her former po-
 sition. But other passages of *Hippocrates* seem to
 shew, that he expected the change of the foetus’s po-
 sition from the concussion of the woman in labour.
 For in the preceding chapter^g, he recommended to
 promote delivery, by such a concussion, whilst the
 pangs were approaching. Moreover, in another
 place^h, in speaking of a foetus which fell transversely
 from a woman in labour, he adds what follows:
Concutere autem hoc modo oportet: super tenui linteo
substrato mulier reclinanda, alio superinfecto, quo ejus
pudendum obveletur & utrumque crus tenui linteo tegan-
dum & utraque manus. Duæ autem mulieres utrumque
crus apprehendant, et aliæ duæ utramque manum; de-
inde eam ipsam non minus quam decies valide concutiant.
Postea vero mulier in lectum reclinetur, ita ut caput
deorsum, crura autem sursum habeat, & mulieres omnes,
dimissis manibus crura apprehendant, eamque crebro in lecto
concutiant, facta in humeros rejectione ut in ampliorem locum
concussus fœtus convertatur & naturaliter prodire possit:
 “ The patient should be shaken in this manner; the
 “ woman is to be laid on a thin piece of linen, ano-
 VOL. XIV. I “ ther.

^g De fœtus in utero mortui exsectione. charter. Tom. XII pag.

“ ther being thrown over her to veil her pudendum,
 “ each of her legs is to be covered with a thin piece
 “ of linnen, and so is each hand. Two women
 “ should take hold of each leg, and two more of
 “ each hand; then they no less than ten times should
 “ shake her hard. Then the woman should recline
 “ upon the bed, in such a manner as to have her
 “ head downwards, but her legs elevated; and all
 “ the women present should take her by the legs,
 “ and shake her hard in the bed, having thrown her
 “ upon her shoulders, that the shaken foetus might
 “ have the more room to turn, and might come out
 “ naturally.”

It was observed before, that till the humours had run out, the foetus was full of motion in the womb, and that now one part of the womb's orifice was touched by it, now another. *Deventer*ⁱ confirms this by his testimony, and at the same time informs midwives, *Infantes isti mobiles raro recte versi prodeant*: “ That these moving children seldom come out in “ a proper position.” But the humours having run out, the contracted womb presses the foetus on every side, and its position could not easily be changed by any concussion. Besides, there would be reason to apprehend, that a separation of the placenta from the womb, might be the consequence of those violent concussions, and that might give rise to a dangerous hæmorrhage. This method of the antients is therefore now entirely laid aside, and the position of the child is altered in such a manner, by the skilful hand of a man-midwife, that it may come out head-foremost, or if that cannot be brought about, may be pulled out by the feet.

For whilst the foetus is disadvantageously situated in the womb, it cannot always be reduced to such a position as to come out by the head: this can be effected only when the head is not very distant from the orifice of the womb, so that it can be easily touched by the fingers of the midwife, and moved out of its position:

ⁱ Nov. lum. art. obstetric. cap. 40 pag. 176,

osition: *Mauriceau*^k was highly offended with the physicians, for giving a general direction to alter the disadvantageous position of the child in such a manner, as to render it entirely natural; as this is often absolutely impossible, and cannot be attempted without danger, both to the child and the mother; he therefore laid it down as a general rule in midwifery, that in any disadvantageous position whatever, the fetus should be pulled out by the feet; which maxim is now generally assented to by the most able professors of midwifery.

Delivery is not now a days looked upon as out of nature if the feet of the child should come out first, nor do the skilful look upon it as difficult, it being certain that it can soon be effected, and that without danger either to the mother or child, provided the other symptoms be natural. Nay, we read in *Moscion*^l, that the best position of the child is, *Quoties caput feruntur, ita ut in orificium matricis directum caput ejus inveniatur, manus scilicet et lateribus et feroribus junctis. Proximum enim bono schemati est, quoties et in pedibus descendit junctis & orificio matricis oppositis, manus scilicet per latera porrectis*: "When it is so born head foremost, that the head is found directed to the orifice of the matrix, the hands, the sides, and the thighs being joined. Next to this, the most favourable posture, is when it descends with its feet joined and opposed to the orifice of the matrix, its hands being stretched out along its sides."

It is true, when the child is pulled out by the feet, the hands and arms seldom continue stretched out along the sides of the body, but are raised up whilst the trunk of the body passes through the orifice of the womb, so that the arms must afterwards pass through with the head, and thus by their bulk, they render more difficult for the head to pass. *De enter*^m ac-

^k Traite de malad. de femm. gross. liv. 2. chap. 21. pag. 314.

^l Harmon. gynæc. pars prior. cap. 11. spach. gynæc. pag. 10.

^m Nov. lum. art. obstetric. cap. 40. pag. 198.

knows, that all authors require, *Ut brachia suc-*
cessive producta juxta corpus ponantur; ego tamen con-
trarium sentio, et expertus sum, in hac, aliisque rebu-
plurimis; quapropter brachia juxta caput relinquenda esse
confidenter suadeo, simul cum capite excludenda. Parturien-
quidem fateor, infantem omni nisu propellere tenetur, seu
nubecula est cito transitura, &c. and he afterward
 adds, *Mihi sane hoc modo res semper prospere successit*
huic ergo praxi porro inhærebo, qua periculum non est
caput ab humeris avellendi, quod Paulo Portaali aliisque
(uti ultro ipsi fatentur) sæpius contigit; neque mirum
hoc est: brachiis enim juxta corpus detractis, os uterum
instar laquei vel tendiculae contractum, & conclusum, non
raro præfocat infantem aut si jam defunctus sit, & tene-
lus, caput facile avellitur, quod in utero remanens unci-
dein ferreis extrahendum est: “ That the arms being
 “ successively produced, should be placed near the
 “ body; however (continues he) I have been taught
 “ by experience to differ from them in this, and
 “ many other particulars; I therefore with confi-
 “ dence advise, that the arms should be left by the
 “ head, and pushed out together with the head.
 “ I own that the woman in labour should exert her
 “ utmost efforts to force out the child, but a bull-
 “ so inconsiderable, will quickly pass.” He then
 adds what follows, “ I have indeed been always suc-
 “ cessful by this method; this practice I shall adhere
 “ to, as it is not attended by any danger of pulling
 “ the head from the shoulders, which has often hap-
 “ pened to *Paul Portaali* and others, as they them-
 “ selves acknowledge; nor is this at all to be won-
 “ dered at, for the arms being pulled near to the body
 “ the mouth of the womb contracted and closed like
 “ a halter or tenter-hook, frequently strangles the
 “ child, or if it be already dead and tender, its head
 “ is easily pulled off, and remaining in the womb
 “ must be afterwards taken out with iron hooks.”

But if the head of the child be of a considerable
 size, or the child itself brawny, then it is certain that
 great force must be used to bring out the head alone

with the shoulders; which does not seem without danger. But when the case is different, this may be attempted. Hence we see, that many very skilful men that have wrote since *Deventer*, have advised that the arms should be pulled away from the head, till the child is brought out as far as the arm-pits; though they do not affirm, that this is always, but very often necessaryⁿ.

But *Levret* ^o has observed, that out of twenty children who are placed obliquely in the womb, there is scarcely one that inclines towards its left side. He however was not able to discover the cause of this.

S E C T. MCCCXXI.

THIS is effected; 1. By placing the mother properly; 2. By changing the position of the child.

I. The posture of the woman in labour, may be considered in two lights, either as it favours natural delivery, that the child may the more easily come out, or whilst by a change of her posture, art endeavours to correct the disadvantageous position of the womb, or to render it more easy to change the disadvantageous situation of the child. In natural delivery, the posture should be such, that the midwife may use her hands with ease whilst she assists the woman in labour: and that there may be no obstacle whilst the os coccygis is to go back during the passage of the child's head. But as there may be many such postures, different postures are chosen in different places, and women do not easily forsake that which they are accustomed to. *Levret* ^p says, that delivery may be happily effected in almost any posture, if it be completely natural; wherefore the man-midwife should not much mind what posture the woman in labour

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gives

ⁿ *Levret* art. des accouch. pag. 116. *Crantz* *Emleitung in die Hebammenkunst*. pag. 62. ^o *Ibid.* pag. 105. ^p *Levret* art. des accouch. pag. 110.

gives the preference to. *Latona* throwing her arms about a palm-tree, placed her knees upon the grass, and was delivered of *Phœbus*^a. *Mauriceau*^r has observed, that country women when in labour chuse this posture, others are desirous of the seat of women in labour, the figure of which is to be seen in *Deventer*^s. *Mauriceau*^t approves of women's being delivered in bed, and many agree with him herein, because this affords the woman in labour an opportunity of reposing immediately after she is delivered, as there is no occasion for carrying her from the seat to a bed. But the bed was furnished with a proper quantity of linen rags, that the blood and filth might be easily removed. Amongst those who are in good circumstances, it is customary to make two beds contiguous to each other, that a few hours after delivery, the woman in labour might be conveniently removed to a clean, dry and warm bed, and might not be forced to lie dirtily for a long time. A hard bed is reckoned beneficial to a woman in labour, least in too soft a bed, a hole might be made which might obstruct the backward motion of the os coccygis, and the midwives manual operations; therefore *Mauriceau*^u advises to lay ticken upon the bed, not stuffed with feathers, but with horse-hair; *Levret*^x recommends the same caution in a difficult delivery, which is to be effected by the hand of the man-midwife; but after delivery, a soft bed is best. *Moschion*^y has judiciously remarked this, directing that two beds should be made, one of which should be hard, such an one being useful during the lying in; the other should be soft, to receive the patient after delivery.

It was before observed, that the pregnant womb is extended by slow degrees, and at the same time ascends

^a Homer. hymn. in Apoll. spondan. pag. 347.
malad. de femm. gross. liv. 2. chap. 7. pag. 244.
art. obst. cap. 26. pag. 90.
nov. lum. art. obstetric. cap. 26. pag. 90.
accouch. pag. 113.

^t Ibid.

^r Traite de

^s Nov. lum.

^u Deventer

^x L'art des

^y Spach. gynæc. pag. 4. No. 48.

ascends beyond the limits of the pelvis, into the cavity of the abdomen: but this chiefly obtains in the bottom of the womb, which is its highest part, and when it mounts up to the ventricle, as has been said before. It is easy to conceive, that the womb being thus distended, can in the abdomen decline towards either side, or fall out before if the abdomen hangs forward, whilst women in labour very injudiciously bind the abdomen with stays, and so obstruct the free ascent of the swelling womb. *Levret* ^z admirably remarks, that the bottom of the womb cannot fall back, the column of vertebræ which juts out on the inside, prevents this: it can therefore happen only when a bad conformation of the back-bone makes the vertebræ of the loins jut forth outwardly. It is at the same time evident, that the bottom of the womb taking this direction, its orifice inclines towards the opposite part, nor does it directly answer to the vagina, which might give rise to difficult delivery.

It appeared in sect. 1290, that this deviation of the womb was known to the antient physicians, and that they sometimes took it for the cause of the suppression of the courses; when the mouth of the womb did not directly answer to the vagina, but being placed obliquely, was so pressed to the adjacent parts, that its aperture was either diminished or quite stopped up. We there likewise spoke of the method made use of by *Hippocrates* to change the disadvantageous position of the orifice of the womb into a natural one. But if the excretion of the monthly courses could be obstructed by this cause, it is evident that delivery may be rendered difficult by it. *Moschion* ^a has also described the various declination of the neck and orifice of the womb, and tells us, that the midwife can examine this with her hand, and enumerates the various symptoms according as the mouth of the womb presses these parts or those. At the

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same

^z L'art des accouchm. pag. 37.
pag. 18. No. 141.

^a Spach. gynæc.

same time, it must be acknowledged, that till *Deventer* wrote of the disadvantageous situation of the womb's orifice as a cause of difficult delivery, few authors or none have touched upon this subject, or have discussed it in a manner worthy of its importance; they have scarce done any thing else but speak of the disadvantageous position of the child in the womb, as an unlucky circumstance. *Deventer* informs us, that he, for this reason, published his work, intitled, *Novum Lumen Obstetricantibus*, "The
 "Midwives New Light;" and he complains ^b,
Plerosque hanc sententiam non admodum fide dignam habituros esse; alios item nasutos, eandem ridentes, tanquam falsam & novam rejecturos: "That many
 "would look upon what he offers as unworthy of
 "credit; and that others addicted to raillery, would
 "laugh at it, and reject it as new and false."

The opinion of *Deventer* has been since confirmed by other excellent authors upon the subject of midwifery; and *Levret* ^c has asserted, that the chief cause of the oblique figure of the womb, arises from the place to which the placenta sticks. For though it generally speaking, grows to the bottom or the hind part of the womb, it is certain from observations, that the placenta can grow to every part of the womb's cavity, not excepting even the circumference of the womb's orifice. Now as the diameter of the placenta, is seven or eight breadths of the thumb in length, and one breadth of a thumb in thickness, it is self evident that the substance of the womb, to which the placenta is joined, must be increased in bulk; wherefore the bottom of the womb, which has its place in the abdomen, will incline to that part to which the placenta is joined, according to the law of gravity; and at the same time, the neck of the womb and its orifice, will, for the same reason, tend to the part directly opposite. Thus, if the placenta
 should

^b *Deventer* cap. 11. pag. 47.
 pag. 36. & seq.

^c *Traite des accouch.*

should stick to the lateral part of the right side of the womb, then its bottom will decline toward the right iliac region, but the neck will stay in the opposite part. Hence it appears, that the womb hangs directly over the pelvis, then only when the placenta has grown to its bottom or hindmost part, if the body of the pregnant woman be of a right conformation: the same thing will happen if the placenta should grow to the orifice of the womb; this is but rarely the case, and when it proves so, there almost always follows a hæmorrhage of the womb, when the pregnancy is near an end.

Might not *Hippocrates* mean something of this kind when he said what follows^d: *Si cui secundæ pueri in utero exeant, priusquam puer foras prodire incipit, difficile parit; magisque periclitatur, nisi caput præcedat*: “ If the membranes which should
“ be excluded after the birth should come from the
“ woman, before the child begins to come out, she
“ will be delivered with difficulty, and her danger is
“ the greater, if the head does not come out first.” For if the placenta, which grows to the orifice of the womb, should come out first, there follows a copious and dangerous hæmorrhage: but when the head of the child immediately follows, and stops up the orifice of the womb, there is no passage left for the blood. In the text of *Hippocrates*, we meet with the word *χωρίον*, which signifies the last of those membranes which wrap up the foetus; but *Galen*^e informs us, that this word likewise means the secundines *τὰ ὑσέρη*; amongst which the placenta also is comprised.

This declination of the womb may in a pregnant woman be discovered by the sight and touch, whilst the bottom of the womb declining either on one side or the other, causes the belly to swell: nay, the pregnant women themselves are accustomed to say, that they carry the foetus on this side or on that, whilst they feel a greater pain occasioned by the compression

^d De superfoetat. cap. 1. charter. Tom. VII. pag. 861.

^e Comment. in aphor. 49. sect. 5. charter. Tom. IX. pag. 224.

sion or the pulling of the neighbouring parts, and feel a greater motion of the foetus in that side towards which the bottom of the womb has declined. It is a great advantage to know these particulars, that afterwards at the time of delivery this may be remedied, by changing the posture of the woman in labour. For a difficult delivery must always be expected, if the orifice of the womb does not answer directly to the vagina; nay, delivery will sometimes be altogether impossible, till this position of the bottom of the womb is changed. For if the bottom of the womb should fall down before, the neck and orifice of the womb will make a right angle with the vagina; the neck of the vagina will be compressed, so that no urine can come out. But how, and by what dexterity of hand, the position of the bottom of the womb can be so changed, that a happy delivery will follow, may be seen in *Deventer*^f, who has treated copiously of these matters; we may justly add what *Levret* has said upon the same subjects^g.

2. The child's position is natural when it comes out with its head first, its face looking towards the os sacrum of the mother: but when the child's position in the womb, deviates from this natural situation, this should be altered, if possible, as hath been already said; or if the head should be too far distant from the orifice of the womb, the feet are to be sought out, that these being caught by a skilful hand, the child may be pulled out. This midwives call "turning the child." It sometimes happens, that children come out by the feet; sometimes other parts of the body are, by the touch, perceived in the orifice of the womb.

It is obvious to every body, that it is absolutely necessary that the parts that offer themselves should be distinguished, that the midwife may direct her hand in the womb, whilst she is in search of the feet.

But

^f Cap. 46. & sequent. pag. 201, &c.
pag. 103, 110.

L'art des accouch.

But with regard to the dexterity and caution required, in order to turn the child with safety, the several authors who have written upon the art of midwifery, and whom we have already cited with approbation, may be consulted, in particular *Levet*^h, where a most accurate description of all particulars is given. For as soon as it is known with certainty, that the child is disadvantageously placed in the womb, and that its orifice is already open, it is most adviseable to attempt turning directly, as it will be a much more difficult matter to effect it after the humours have run out, and the womb is become contracted and dry.

When the child is come into the world, the lying-in woman is not entirely disengaged; for the membranes which wrapped the child, the navel-string and the placenta, being grown to the womb, still remain in its cavity; all these things should be removed, that the womb may be able to contract itself, and that the vessels distended with blood, may be evacuated, and at last reduced to their proper size. All these parts taken together, the *Greeks* called τα ὑστερα, the secundines or after-birth, as they have been called by some, as the taking out of these is sometimes attended with considerable trouble; wherefore much prudence is here required. But as all that goes under the name of secundines can be of no use when the child is brought into the world, many are for having the womb immediately disburthened of this useless luggage. Thus *Mauriceau*ⁱ directs, that the secundines should be taken out with the utmost expedition, even before the tying and cutting of the navel-string, fearing least the womb should be closed in case of delay. *Deventer*^k directs, to cut the navel-string first; but this being done,

^h L'Art des accouch, pag. 113—127.
femm. gross. liv. 2. chapit. 8. pag. 243.
obstetric. pag. 125. cap. 28.

ⁱ Traite de malad. de
^k Nov. lum. art.

done, *Sine mora secundis extrahendis omnis opera impendenda erit*: “ The chief care should be to take out “ the secundines without delay.” Nay, if there should be a woman capable of this present, he directs that she should tie and cut off the navel-string, *Dum obstetrix quæ primum infantem sinu excepit bene valentem, vena umbilicali nondum constricta, vel abscissa, ocyus manum immittere potest extrahendæ secundinæ gratia*: “ Whilst the midwife who first received the “ child in perfect health in her bosom, the umbilical vein not being then bound or cut off, should “ quickly put in her hand, in order to take out the “ secundines.” He gave the preference to this method, because soon after delivery, the gaping orifice of the womb and the womb itself not yet contracted, easily admit the hand of the midwife without there being any occasion for force, and without putting the lying-in woman to any pain: in this manner there was no danger, least by drawing the navel-string, the bottom of the womb should be dragged out inverted; at the same time, the connection of the placenta with the womb may be dissolved if it be too strong; and if either a shapeless lump of flesh, or clotted blood, or torn parts of the membranes should stick to the womb, these may be all insensibly brought out by pulling back the hand, least they should rot by being left in the womb too long. He likewise thought that he should in this manner have it in his power to restore the crooked womb to its proper situation, so that he did not immediately draw back his hand; or if he did so in pulling out the secundine, he then plunged it again into the womb, and waited till the womb was contracted about his hand. He assures us, that this method was always successful.

But others, and those men whose opinion in cases of midwifery is of the highest weight, advise not to be too hasty; they would rather have the womb upon the exclusion of the foetus be a little contracted, before any attempt should be made to take out the placenta.

placenta. This is the advice of the celebrated *Monro*;¹ and *Levret*^m a man of the greatest experience in these matters, gives us to understand, that no attempt should be made to take out the placenta, unless the midwife be certain, that it is in such a state that it will come out easily.

It is then thought to be in that state, if before delivery, during delivery, or immediately after the child's coming out of the womb, there flows a quantity of blood from it. For he gives this as a sign that the placenta is either entirely, or in part freed from its connexion with the womb. For though the whole circumference of the chorion is joined to the pregnant womb, and some vessels are plainly perceived to pass from the womb into the chorion; whence, these being broke, whilst the waters bag out, and delivery is near, some blood flows from them, but a smaller quantity, as was said before; yet the largest vessels are in that place where the placenta is connected with the womb. If therefore a quantity of blood comes out either before delivery, during delivery or immediately after delivery, we know that the placenta is at least in part separated from the womb, and that therefore an intire separation may be justly hoped for, if the navel-string be pulled cautiously and gently. But when there does not come out a sufficient quantity of blood, we then know that the placenta still sticks to the womb with its whole surface, and then great caution is required, for by rough handling, the bottom of the womb might not only be turned inside out; but moreover if the placenta was to come cleverly out, a sudden, copious and dangerous hæmorrhage would follow, unless the womb by an immediate contraction, should lessen the size of its vessels.

This is the reason of that prudent advise of the celebrated *Levret*ⁿ, that an attempt should not be made
to

¹ Medical essays & observat. vol. 2. No. 11. pag. 241.

^m L'Art des accouch. pag. 127, 128.

ⁿ Ibid.

to take out the placenta, till the womb has given signs of contraction. For sometimes the womb, though disengaged from the foetus which stretched it, sinks down flaccid and heavy, especially after a laborious delivery, and then the whole abdomen is found upon touching to be even, soft and flaccid; but when the womb is contracted, and diminishes its cavity after delivery, there is felt in the abdomen of the lying-in woman, a swelling shaped like a pear, tolerably hard and compact; we then know that the womb is excessively contracted, and therefore the placenta being taken out, there is no fear of an excessive hæmorrhage.

He was therefore for immediately taking out the placenta, if the hæmorrhage shewed that it was prepared for coming out, that the womb being entirely evacuated, might be the better able to contract itself and so lessen the hæmorrhage; for the blood grows clotted by delay, and forms great lumps, which are not to be got out without fresh trouble. Nay, if such a lump should stop up the orifice of the womb, and the flaccid womb should not contract itself, the secret hæmorrhage continues, and the whole cavity of the womb is filled with blood, so that the lying-in woman is seized with a violent syncope. If the womb appears large and soft upon touching the abdomen of the lying-in woman, it is a sign she is in that dangerous state; the only remedy then is by immediately thrusting the hand into the cavity of the womb to pull out the clotted blood, so that the womb may be able to contract itself, and stop the open vessels.

The very contraction of the womb itself, seems to contribute to the separation of the placenta. For when the little lobes of the placenta enter the hollows of the womb's substance, upon the womb's being contracted, they are forced out as it were, and therefore stick to it the less. *Ruyseb* ° examining the

structure of the womb, said that it as well as the bladder, *Habere substantiam fibrosam, crassam et motricem*: “Has a fibrous, thick and moving substance;” but he has observed likewise, *Etiam peculiaribus gaudere fibris, motricibus, in orbem positis & quidem eo loco, ubi placenta in statu naturali sese utero applicat; nempe in uteri fundo*: “That it has its peculiar moving fibres, placed in a circular order, and that in a place where the placenta in its natural state joins the womb; that is in the bottom of the womb.” *Ruyfch* has drawn these fibres^p, but when he afterwards found his draught not sufficiently accurate, he in the latter part of his life gave another^q. He thought however, that these fibres would best serve for the separation and exclusion of the placenta. But as he met with those fibres only about the bottom of the womb, and well knew that the placenta does not always stick to the same place, he concluded that the placenta would with more difficulty be separated if it was situated without the sphere of this muscle’s activity.

It seems reasonable hence to conclude, that the placenta should be taken out immediately when the blood runs out copiously after delivery; for then it generally comes out with ease, as it is in part disengaged from its cohesion with the womb; but when the case is different, and the womb has given no signs of its contraction, then it is proper to wait: but force ought never to be used; *Ruyfch*^r lamented, that after having practised midwifery during 50 years, he had seen many women healthy and chearful, after a happy delivery, die, because the placenta was roughly pulled out. *Hippocrates*^s in case the secundines do not easily come out, in express terms, gives us the following advice, *Id sensim, non vi faciendum, ne præter naturam divulgum quid inflammationem excitet*: “That it should be done gradually and not by force, least any thing being torn and pulled in an unnatural

^p Tab. 3. fig. 1.

^q Tractat. anatom. pag. 9.

^r Ibid. pag. 11.

^s De superfætat. cap. 3. charter. Tom.

“ tural manner, should cause an inflammation.” He advised to attempt getting out the placenta meerly by the weight of the child, and that in as gentle a manner as possible; he therefore advises that, *Supponendæ itaque fœtui lanæ, quam maxime sublatae, recens carptæ, quo paulatim cedant; aut utriculi duo copulati, aqua pleni, supra quos lanæ imponendæ, et supra lanas fœtus collocandus; deinde uterque utriculus stilo pungendus, quo sensim aqua defluat, effluente vero aqua, utres demittantur ac confidant; his autem demissis, fœtus umbilicum attrahit, umbilicus vero secundas extrahit, &c. ad eundem quoque modum, abrupto aut ante tempus abscisso umbilico, convenientibus appensis ponderibus, secundarum educitio molienda. Hæc enim istorum est optima curatio, & minime lædit:* “ Fresh wool should be heaped
 “ up under the fœtus as high as possible, which may
 “ yield by degrees, or the wool should be laid over two
 “ leather bottles full of water, and the fœtus should
 “ be placed over the wool; then a hole should be
 “ made in each bottle that the water may run out
 “ insensibly; then the water running out, the leather bottles should be let down; these being let
 “ down, the fœtus draws the navel, the navel draws
 “ the secundines, &c. in the same manner, the navel being either broke of, or cut off before the
 “ time, the secundines should be got out by hanging on proper weights. This method is by much
 “ the best, and the least dangerous.”

Though this method of taking out the placenta is not now made use of as the same end, may be compassed by pulling the navel-string with a prudent hand; it however shews that *Hippocrates* entirely disapproves of using force upon this occasion.

What we read in *Moschion*^t is admirable; especially if we add to it what the *Latin* translation contains, added from the book called, a Treatise upon the Matrix^u, which tells us what is to be done if the secundines should stay in the womb. As better advice cannot be

^t Spach. gynæc. pag. 4. No. 53 & 54.
 gynæc. part. prior. cap. 14. No. 7. pag 13.

^u Harmon.

be given upon this subject, the passage at full length will doubtless be acceptable to the reader. *Cum infans in manus obstetricis ceciderit, si ad umbilicum adhuc coherit, obstetrix debet etiam attentare leviter, hac et illuc adducens, an per ipsum umbilicum infantis possit foras adduci, adjuvante conatibus suis et ipsa parturiente; idque fiat quando fundo non adhærent, & orificium patet. Neque vero in directum conatur, ut ne matrix simul adducatur. Si vero tarditas ipsa moram habuerit, præciso umbilico separandus est infans, cumque alia mulier accipiat, et reliquum ipsa teneat, et cum se matrix aperiat, ducendum, cum autem recludit, non conandum. Sed si ruptum vel præcisum, statim intus se absconderit, orificio matricis patente, perunctam manum statim obstetrix immittere debet, etsi jam ad fundum matricis recesserunt, & si obsolutæ sunt et natant, quacunque parte apprehensis, tollere debet. Si vero adhuc ad fundum matricis tenentur, resolutis ibi digitis & apprehensis secundinis, tentare hac et illac & adducens persuadeat auferre. Illæ vero quæ imperitia in directum conantur, frequenter & ipsam matricem adducunt. Sed si ne sic subsequuntæ sunt, aut orificium matricis statim se clauserit, ut neque manus in mitti, neque ipsæ exire possint & fervor fuerit subsequutus ibi, ejusdem demissis, omnibus succis, & encathismate & cataplasmatibus et vaporationibus, quibus ad fervorem uti solemus, utendum est. Hæc enim diligentia, omni strictura laxata, frequentius quicquid ibi remanserit, & alienum est, foras emittitur & sua sponte cadit:* “ When the child comes into the hands of
“ the midwife, if it sticks at the navel, the midwife
“ should try, by gently moving it this way and that,
“ whether it can be brought out by the navel of the
“ child, the woman in labour helping it all she can
“ by her own efforts; which should be done when
“ the child does not stick to the bottom of the
“ womb. She should not make direct efforts, least
“ the matrix itself should be brought out. But if
“ this should prove too slow, the navel being cut, the
“ child should be separated, and another woman
“ should take it, and she herself should hold the

“ rest ; and when the matrix opens, should pull ;
 “ but when it shuts, should make no effort. But if
 “ what is broken or cut, should immediately hide
 “ itself within, the orifice of the matrix being open,
 “ the midwife should thrust in her hand anointed all
 “ over, and if they have sunk to the bottom of the
 “ matrix, and are wrapped up and swim, she should
 “ take hold of them by any part and pull them out.
 “ But if they are still held at the bottom of the ma-
 “ trix, the midwife should perswade the patient to
 “ open her fingers there, and having tried this way
 “ and that, pull them out. Those who foolishly
 “ make a direct effort, often bring out the matrix at
 “ the same time. But if the secundines do not fol-
 “ low even so, or if the orifice of the matrix imme-
 “ diately closes, so that the hands can neither enter
 “ it nor they come out, and if a heat should follow,
 “ then use should be made of all sorts of juices,
 “ baths, cataplasms, steams, and every thing that
 “ can raise a heat. For by this care, all tightness
 “ being relaxed, whatever remains in the womb and
 “ does not belong to it, is thrown out and falls of
 “ itself.” It is evident that by a heat ζέω, inflam-
 mation is here understood. He therefore censures
 other methods used for the expulsion of the secun-
 dines*. *Sternutamenta et a scala suspensiones & po-
 tiones dabant, quæ eas ejicere possent, et fumos suffiebant
 & pessos sanguinem educentes subiciebant. Quin etiam
 pondera ad ipsum folliculum ligabant. Quæ omnia nos
 reprobamus ; siquidem fervorem partibus ipsis facere pos-
 sunt et præsentem sine dilatione sanguinis fluxum :*
 “ They prescribed sternutations, suspensions and po-
 “ tions to throw them out, they fumigated, and
 “ they had recourse to suppositories which draw the
 “ blood. They moreover hung weights to the bag
 “ itself ; all which remedies we disapprove of, as
 “ they may increase the heat of the parts, and the
 “ flux of the blood without relaxing.” But though

Mauriceau

Mauriceau ^y would by all means have the placenta taken out, and that as expeditiously as possible, as he apprehended that the death of the lying-in woman might be the consequence of its being left behind; yet he earnestly advises midwives to be very cautious in attempting this, and not to use any considerable force in dilating the mouth of the womb, affirming that it is better in case any part of the placenta should remain, to leave it, rather than hurt the substance of the womb. Nay, he directs us to leave the whole business to nature, if violence should be necessary in order to bring out the placenta; and in that case he recommends the injection of emollient decoctions into the womb, that the orifice of the womb may be softened, and that a suppuration coming on, the placenta may be separated from its cohesion with the womb. This being done, he advises to give the patient a clyster with pretty strong ingredients, that the placenta may come out with the efforts to stool; this has often happened, nay it has sometimes come out of its own accord, without the knowledge of the patient. Therefore *Ruyfch* ^z is justly against all violence in case the placenta should stick too close; he is likewise against dilating the mouth of the womb, and advises to leave the patient to her repose. For the mouth of the womb will be relaxed of its own accord, and the placenta will come out in a few hours: nor did he apprehend that putrefaction would be the consequence of leaving the placenta any time, as he had never seen an instance of it. For he informs us that, *Nullam puerperam ex adstricta et remansu, secundinarum mole, tempore plusquam quinquaginta annorum, quo ipsi professoris in arte obstetricia sparta, ante nemini oblata humanissime dimandata fuit, obiisse, nisi placentam uterinam nimis atroci nisu per frustra eradicare voluerint. Familiare ipsi etiam fuit, eandem per dies, septimanas, quid? quod menses in utero retentam et feliciter expul-*

K 2

Sam

^y Traite de malad de femm. gross. liv. 2. chap. 9. pag. 252. &

^z Tractat. anatom. pag. 13.

sam fuisse: “ During the space of upwards of fifty
 “ years that he had been a professor of midwifery
 “ no lying-in woman ever died by a retention of the
 “ placenta, without having by too violent efforts
 “ endeavoured to get it out bit by bit. He adds
 “ that he has often known the placenta to be re-
 “ tained for days, weeks, nay even for months to-
 “ gether, and then happily got out.”

Nor do countrymen and those that have the care of
 cattle, imagine that a cow's death will be the conse-
 quence of the retention of the secundines ^a. On the
 contrary, it has been a constant rule with them to
 leave the secundines in, if they do not come out along
 with the calf, and then they generally come out of
 themselves nine days after. But if they were pulled
 out immediately after delivery, a suppuration of the
 womb would often be the consequence ^b. *Brudenel*
Exton ^c, a person of great experience in midwifery
 remarks, that the secundines generally follow ten
 fifteen, or twenty minutes after delivery, and that
 there is not often occasion to separate them by thrust-
 ing the hand into the womb, as they generally fol-
 low upon gently pulling the navel-string: he like-
 wise acknowledges that the orifice of the womb can
 be as easily dilated a few hours after delivery as be-
 fore: he confesses that if any part of the secundines be
 left in the womb (if a great hæmorrhage does not fol-
 low) it generally comes out of itself in a day or two
 and that without any injury to the lying-in woman.
 He however advises, for the sake of the midwife's
 reputation, that the intestines should be taken out
 entirely before she quits the lying-in woman; for he
 adds this reason, in order to avoid reflections. For
 the same reason he is against leaving the placenta in
 too long, as it may otherwise be retained for some
 days. Not that he fears any very bad consequence
 from this; for he adds what follows: *Si uterus a quo-*
dam

^a Ibid pag. 16.
 Rundvee, pag. 62.

^b Verhandeling van de ziekte van he-
^c Sect. 7. pag. 238.

dam accidente inflammavetur, et puerpera periret, obstetricanti imputaretur quia secundinas reliquit: “ If the
 “ womb should by any accident be inflamed, and
 “ the lying-in woman should die, the blame would
 “ be laid on the midwife for having left in the
 “ secundines.”

From what has been said, it is evident that the ill consequences that attend the retention of the secundines, often proceed from the rough methods of the midwives, who are tender of their reputation; for they think it a shame to leave the patient without completing their work, for this reason they stick at no bold attempt whatever. It was said by *Hippocrates*^d, *Ad secundarum elapsum, sternutatorio admoto, nares & os comprimere oportet:* “ At the coming out
 “ of the secundines, the nostrils and mouth should
 “ be compressed by the administration of a sternutatory. But this gives rise to a great concussion of
 “ the whole body, and chiefly of the abdomen.” Can it be thought safe to agitate the womb so strongly by sternutatories and compression, when it has suffered so much during delivery? Are not worse consequences to be apprehended from thence than from the too long retention of the secundines? It is no great wonder if after having made these attempts, though to no purpose, there should follow pains in the abdomen, cold fits and fevers. Thus we elsewhere read, *Quum secundæ statim a partu non secesserint, uni ventris dolores in laterum inanitate suboriuntur ac febres; quod si secundæ secesserint, mulier etiam sanescit. Plerumque vero putrescunt; sexto vero aut septimo die aut etiam posterius secedunt:* “ When the secundines
 “ do not come out immediately after delivery, pains
 “ in the lower belly, and fevers arise from inanition;
 “ but if the secundines come out, the woman recovers. They generally rot, however, on the sixth
 “ or seventh day, or even later, they come out.”

However

^d Aphor. 49. sect. 5. charter Tom. IX. pag. 224, & epid. lib. 1. in fine ibid. pag. 288.

However that this rotting of the secundines which he takes notice of, is not very dangerous, is evident from another place ^e. *Si mulieri secundæ relictæ fuerint, nisi uteri amplo ore fuerint parvior quam conveniat purgatio prodit, venter durus et magnus evadit, frigus detinet et febris acuta & dolor totum corpus, præcipue vero ventris partem umbilico inferiorem pondusque in utero ac tormina ac si fœtus existat sentiuntur. Et curata secundas brevi putrefactas ejicit & sana evadit.*

“ If the secundines should be left in a woman, unless
 “ the womb’s mouth be large, her courses are less
 “ frequent than necessary, the belly becomes hard
 “ and big, cold, an acute fever and pain seize upon
 “ the whole body, especially that part of the belly
 “ which is below the navel, and a weight and pangs
 “ are felt in the belly just as if the fœtus was there.
 “ The woman being taken proper care of, soon
 “ throws out the rotten secundines and recovers.”

It is no wonder that when the secundines are left in the courses are not frequent, as the placenta is connected to the womb by the largest blood-vessels, upon the loosening of which, blood flows copiously. It is evident from another passage ^f of *Hippocrates*, that he expected the expulsion of the retained secundines from the strength of the womb alone; his words are:

Quam vero in utero gerens fœtum menstruum aut bimestrem corruperit, et secundæ exire nequeant, ipsa autem tenuis sit, hujus corpus tunc purgare & optimum reddere oportet. Non enim prius putrefacti fœtus exeunt, nisi uteri robusti & bene compacti fuerint: “ When a woman bears a fœtus of a month or two months old
 “ which putrefies, and the secundines cannot come
 “ out, and she herself be thin, her body must be
 “ purged and rendered of good case. For putrefied
 “ fœtus’s do not come out, except the wombs are
 “ strong and well conditioned.” It is well known that the secundines are with more difficulty taken out

^e Ibid. cap. 53. pag. 758.

^f Ibid. chap. 52. pag. 757.

out when a woman miscarries, especially if the woman has been pregnant only a few months; so that they are oftener left in the womb when a woman miscarries, than when she is delivered according to nature.

From what has been said, it is evident that the secundines should be taken out, that a woman who is brought to bed may be entirely disengaged; and they should be taken out directly if they should be a considerable hæmorrhage, as delays are then dangerous; but in that case, the placenta follows more easily, as it is in part loosed from the womb; but if it does not, we should wait till the womb has given signs of its contraction; which may be known by touching the abdomen, as was said before. But no force should be used whether the orifice of the womb be closed up very fast, or the placenta does not stick fast enough; as much worse consequences are to be apprehended from that violence than from the placenta's being left in a considerable time, since it always comes out sooner or later of itself. *Ægineta* §, after having enumerated all things preparatory to the taking out of the placenta, tells us, *Si ne sic quidem exemptæ fuerint, non convenit turbare: post paucos enim dies putrefactæ & in saniem resolutæ, excidunt*: "That
 " if they cannot be got out even so, it is not advise-
 " able to have recourse to violence; for after a few
 " days, they being rotten and turned to corruption,
 " drop out of themselves" But in the mean time he apprehended the consequences of the bad smell which might fill the head and disorder the stomach; which evil he directs us to remedy by fumigations. However the retained placenta does not always putrefy to such a degree: I have seen it come out intire in three days time, whilst the lying-in woman made water, nor did I find it rotten, and the patient recovered happily, though a whole family of the first distinction was highly offended with me for pre-

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venting the midwives using violence, in order to get out the placenta.

As it is customary for matrons to examine the secundines attentively after they are brought out, and as they are filled with most terrible suspicions if there be the slightest suspicion of any particle of the membranes or the placenta's being still left in the womb; I have always endeavoured to ease them of their scruples as much as possible; and if I suspected any thing of the kind, I concealed it with care, least the lying-in woman should be made uneasy by such intelligence, or the midwife's reputation should be in jeopardy. For any ill accident that afterwards happens during delivery, is usually attributed to this neglect. Whence there is reason to fear, least midwives should afterwards hurt the womb by cleansing it too much. *Levret*^h, so much celebrated for his skill in midwifery, has remarked, that the surface of the womb in that part to which the placenta stuck, is raised into crests of a considerable magnitude, which may pass upon the midwife for remains of the placenta, which by tearing away, they may tear the very substance of the woman. Sure I am, that such remains will afterwards come out of themselves, together with other evacuations; nor do they hurt the lying-in woman, though they are of dangerous consequence to the midwives reputation, which a humane physician will always endeavour to preserve. Nor is there any danger from the putrefaction of the parts left behind, as the consequences can be easily prevented by washing the womb in a proper manner; as will be shewn in the next chapter.

The passages relating to the taking out of the placenta, which we meet with in the same placeⁱ, are well worth reading, for all things requisite for this purpose are there described.

Though

^h Mem. de l'acad. de Chirurg. Tom. III. pag. 229.

ⁱ Pag. 216—233.

Though the placenta generally sticks to the bottom of the womb, yet it is most certain, that it is sometimes fixed to other places: and then the womb sometimes contracts itself unequally, retains the placenta as it were, in the peculiar cavity ^k of its substance, and is with difficulty pulled out. *Peu*^l took notice of this, and looked upon such a cell as a sort of a second womb in which the placenta is contained; a cell, whose orifice is not like that of the womb itself, having margins, thick, narrow and hard, but smooth at the same time; he generally found this cell when there was such an one in the right side of the womb, and very seldom in the left. *Denys*^m, celebrated for his skill in midwifery, has with great exactness described that unequal contraction of the womb, by which the placenta was retained. He was called to a woman who lay in for the first time, and had four hours before been delivered of a child; but the navel-string was broke, nor could the midwife by any sort of effort pull the placenta out. She imagined that she touched the placenta, but upon an accurate examination, she found that it was the mouth of the womb, which seemed upon touching to be very soft, thick and broad: having thrust her hand into the cavity of the womb, she found no traces of the placenta; *Denys* was therefore called to her assistance, who having thrust his hand into the vagina, thought likewise that he felt the placenta coming out of the orifice of the womb: the orifice of the womb equalled a man's fist in bigness, being four times the breadth of a finger wide, and the breadth of a thumb thick: he could easily get in his hand; but though he searched the cavity of the womb with his fingers on every side, he could not find the placenta, at which he was very much surpris'd. At length, having a
second

^k Ibid. pag. 222, & l'art. des accouch. pag. 131 & 132.

^l Pratique des accouchm liv. 1. chap. 4. pag. 35.

^m Verhand. over het. Ampt. der Vroed-Meesters, &c. cap. 3. pag. 31.

second time thrust his hand into the womb, he found the hole, which could scarce give entrance to the tip of the little finger; from hence he inferred that the womb was pierced: this hole he wisely dilated with the fore fingers, but soon after the blood burst out; and touching something soft with his finger, thought he touched the intestines: he then put in the second finger with the fore-finger, and perceived that the placenta lay hid in this place; this done, he also put in his thumb, and thus he by degrees, but not without trouble, separated the placenta from the womb, and pulled it out when separated.

This woman suffered no extraordinary pain afterwards, but recovered perfectly.

It is evident that such a case as this is perplexing, and requires the expert hand of a skilful midwife. Is there not room for hopes that such a particular closing of the womb as that by which the placenta is shut up in a sort of cavity peculiar to itself, will cease? *Crantz*ⁿ has remarked, that if in such a case, whilst the hand of the midwife is in the cavity of the womb, the woman in labour feels new pains, then that sack in which the placenta stuck, is opened, and as it were vanishes, and the placenta then easily follows.

Every thing being thus got out of the womb, a soft linnen cloth folded four times, is applied to the privy parts, in order to keep off the cold air, which is very dangerous.

Of the DISEASES of CHILD-BED.

A Lying-in woman is seized with weakness, a syncope, convulsions, immediately after delivery; because the arterial blood is driven from the brain and the cerebellum, into the lax vessels of the abdomen; then with a pain after delivery, occasioned by the fatigue undergone,
or

ⁿ Hebammenkunst. capit. 9. pag. 150.

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or proceeding from the parts being worn, from
blood or from another foetus, or the secundines
remaining in the womb.

We come now to treat of those diseases which succeed delivery, and which proceed from delivery as their cause; to this class likewise, may be reduced those which owe their origin to the pains suffered during delivery. For a woman during her lying-in may be seized with other diseases, as for example, such as are epidemical, and others which we shall not here treat of: if such should happen to occur during the time of a delivery, the physician in treating them should always attend to the exigencies which attend every delivery.

That these things may be all treated of in proper order, we are to consider those things that necessarily follow when the foetus and the placenta are got out. The womb being distended before delivery, changed the situation of the intestines, pressed all the adjacent parts, made the vessels, especially those of the nature of veins, more narrow than before; hindered the free action of the diaphragma, extended the muscles and teguments of the abdomen. Upon the womb's being evacuated, all these symptoms cease: the pendulous viscera of the abdomen sink into their former place, the neighbouring venous vessels, so often swollen in pregnant women, quickly send back the retained blood to the heart, sometimes they almost overwhelm the right side of the heart; the arterial vessels being now free from pressure, more easily admit the blood that is forced out of the heart, which they pour into the veins now disengaged likewise. The abdominal muscles had lost their strength, by being continually kept stretched; the pendulous and flaccid coverings no longer resist (see Sect 25. No. 3.) after the separation of the placenta from the womb; the great vessels of the womb being open,
2 pour

pour forth blood copiously. All these causes concurring, contribute to produce faintness and a syncope immediately after delivery. For almost all the blood tends towards the lower vessels of the body, now lax and wide open, a small quantity comes to the brain and the cerebellum. For this reason, that period of a woman's lying-in, which immediately follows delivery, is reckoned the most dangerous, and if the womb did not make its own vessels narrow by squeezing them, there would be still greater danger. For this reason, the skilful in midwifery, as has been said already, advise not to loose the placenta from the womb, till it is certain that the womb contracts itself; this likewise is the reason they are so full of apprehensions, if the womb now become quite empty and flaccid, floats in the abdomen, nor is found upon touching to be contracted into a globe. For then lying-in women run with blood, and by the sudden inanition of the vessels, die in convulsions; pretty nearly in the same manner that the strongest animals, when their arteries are cut open by the butcher, their blood being entirely exhausted, are seized with violent convulsions before they die. For the same reason there is some suspicion of danger in a too easy delivery, when the foetus with one effort, forces its way out, together with the humours which burst forth, or when being shut up in the membranes still entire, it comes out along with the placenta. There was then no time left for the womb to contract itself. But when the foetus follows a short time after the humours are burst forth, then it has contracted itself already, and has on every side applied itself to the body of the foetus. This is known to those who do the office of midwife, as they with their hands turn the child on account of its disadvantageous position, that there may be an opportunity of taking it out by the feet. Such a misfortune is chiefly to be apprehended in those women, who being of a delicate constitution, have lived in luxury and ease, and whose
monthly

monthly courses are generally considerable. Many such melancholy cases are to be met with in authors, which it would be here superfluous to relate. *Hippocrates* ° seems to have this in view, when he says: *Cum torpore exsolutiones, difficiles quidem ex partibus contingunt & mentem emoventes, non tamen perniciosæ. Sed et mensum copiam præsignificant*: “ Delivery is often succeeded by troublesome relaxations which disturb the mind, but which are not very dangerous. They also indicate that the courses are copious.” He seems only to have hinted at a slighter degree of this disorder, namely, the actions of the brain’s being disturbed but inconsiderably. For the word *παρακρησιναι* denotes only a slight emotion of the mind; nor did he make mention of weakness, syncope and convulsions. But he takes notice that such women have copious courses; for the word *λυναικεία* in the works of *Hippocrates* signifies both the monthly courses and the evacuations after delivery; and this is true in both senses, for such feeble and delicate women run both with their monthly courses, and the matter that comes from the foetus.

Then with a pain after delivery occasioned by the fatigue undergone. No body that never was a witness of it will easily believe with what force a woman in labour exerts herself, especially in her last efforts. With her hands she strongly grasps the bed or the by-standers, she presses a stool placed under her feet, and thus she tires the strongest women that attend her.

Sometimes the bones of the pelvis retire from each other in a difficult delivery, as was said in the foregoing chapter. But what a force must be required to bring this about! Hence, though they upon delivery find themselves greatly lightened, and with joy declare, that they find themselves perfectly well upon being freed from this burthen, they notwithstanding, the next day, feel all their limbs ache,
and

° Coacar, prænot. No. 456. charter Tom. VIII. pag. 884.

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and complain of a general lassitude of the whole
body.

Proceeding from the parts being worn ; the whole cavity of the bones of the pelvis is covered with soft teguments, which whilst the foetus is forced out by strong efforts, are pressed and bruised against the hard bones. The vagina is sometimes observed to swell, but with a gentle tumour, towards the latter end of a pregnancy ; sometimes the lips of the pudenda swell : sometimes it happens that the head of the child, if it be of the larger size, or comes out with a sudden effort, tears the perinæum as far as the anus. But inflammation and all its effects, may be the consequences of a violent contusion. If the head of the foetus long sticks without motion in its passage, a gangræne of the soft parts is the consequence of that lasting compression^p, and afterwards if such women escape, gangrænous crusts fall from them, being occasioned by the suppuration made in the passage : sometimes the rectum itself, and the bladder are seized with a gangræne, occasioned by the lasting and continual pressure, from whence dreadful, and sometimes incurable disorders arise. I have sometimes seen such melancholy cases ; but it is evident, that in such a case, grievous disorders follow.

After delivery, when the distended abdomen is evacuated, do convulsive motions of the muscles of the abdomen succeeding, cause pain ? I have sometimes, but not often, heard lying-in women complain of this. In an illustrious matron who had been delivered of sixteen children, and who was well in all other respects, such cramps of the abdomen were frequently observed during the remainder of her life. *John Storcks*^q, famous for his long practice, the offices he had filled, and his writings in giving an exact description of the disease of which he died, takes notice, that having evacuated the abdomen by an incision

^p Levret l'art des accouchm. pag. 169.
hydrop. universal. pag. 46.

^q Histor.

sion made in the swelled navel, he felt in the abdominal muscles, a troublesome, though not a painful cramp or spasm, which he compares to the uneasy sensation which women just after delivery, feel from the same cause.

From another cause.] Which then requires fresh labour, and may irritate the parts already affected with pain; yet it generally comes out expeditiously enough, the passages being already open.

From blood or the secundines remaining in the womb.] After delivery the whole surface of the womb is moist with blood, and especially that part to which the placenta stuck: mean time the orifice of the womb becomes more narrow, and is sometimes totally closed, though generally speaking it may, during several hours, be dilated with ease by the finger of the midwife, as was said in the preceding paragraph. After the separation of the placenta the blood runs out copiously, but its quantity is soon diminished, and it flows from the whole cavity of the womb much less abundantly, continues there and becomes clotted; and whilst such lumps of blood, the womb being contracted, pass through its orifice, new pains and efforts to exclusion arise, which as they follow after the exclusion of the foetus, are commonly called the latter [pains, which are sometimes very troublesome and cause great uneasiness to the lying-in woman, when she thinks all her sufferings over. It was before said that the pains of delivery begin at the orifice of the womb, so that the skilful midwife perceiving a sort of contraction in the orifice of the womb, accompanied with a tremulous motion, should admonish the woman in labour to promote to her utmost the effort to delivery, which will immediately follow, in case all things necessary to natural delivery are prepared. But after delivery, that easiness of the womb's orifice to be irritated, still continues; whence when a lump of clotted blood is dashed against the orifice of the womb, and thus irri-

tates

tates it, the whole womb is excessively contracted, and thus forces that clotted blood out.

In many I have seen this blood not yet clotted, excite those pains and efforts whilst it passes through the mouth of the womb. It was already said in sect. 1308, that whilst a dangerous hæmorrhage makes it necessary that the foetus should be pulled out, the pains of delivery ought, if not already come, to be excited by a gentle and prudent dilatation of the womb, and ought to be increased if they are come. Hence appears the reason of those pains which follow after delivery on account of blood retained.

These efforts are sometimes considerable: *Ruisch* makes the following observations: *Certo certius autumo uterum sese summopere movere in partu, omnesque partus conatus naturales ab utero fere pendere. Qui conatus post partum non raro adeo vehementer perseverant, ut uteris semet ipsum invertens e corpore procidat. In aliis puerperis, paucis horis a partu, expertus sum, uterum motum fuisse adeo evidentem, ut obstetrices, imo et puerperæ, sæpius mihi dixerint, alium fœtum adhuc in utero restare:* “ I look upon it as absolutely certain, that
 “ the womb moves itself considerably in delivery,
 “ and that all the natural efforts to delivery, proceed
 “ from the womb; which efforts, after delivery,
 “ frequently last so long, that the womb turning it-
 “ self inside out, falls down from the body. In
 “ other lying-in women, I have a few hours after
 “ delivery, found by experience, that the motion of
 “ the womb was so discernable, that the midwives
 “ and even the lying-in women often told me, that
 “ there was still another foetus in the womb.” He acknowledges that having touched the abdomen of the lying-in woman with his hand, he so plainly perceived that motion, that if he had not had a great deal of experience, he might be easily deceived by it.

Sometimes

Sometimes that contraction of the womb is of such force as to squeeze whatever is fluid out of a lump of clotted blood, and condenses it into a sort of fleshy mass of a reasonable firmness, which often has the figure of the internal cavity of the womb, and afterwards is driven out sooner or later, and often passes for the mola, a fleshy and sometimes a spongy substance, that is præternaturally brought into the world instead of the foetus: this mass being driven out, the blood again flows from the womb, a new lump of blood is formed which is condensed in the same manner: I have sometimes known three successive lumps come out of a lying-in woman; but the second was in size inferior to the first, and the third to the second, and all had the figure of the womb's cavity, being the less, in proportion as the womb became more contracted, diminished its cavity. *Ruifch*^s has given us the figures of such lumps, and takes notice that something analogous to membranes is sometimes found hanging to them. It is known however that such membranes may be formed out of blood, and that such swim upon the water after a person has been bled in the foot.

It is evident that pains of the same nature may be occasioned by the secundines remaining in the womb; which subject has been treated of in the foregoing paragraph.

S E C T. MCCCXXIII.

A Swathe binding the relaxed abdomen, removes the first mentioned ills. (see sect. 1322) Another foetus, the particles of the secundines, and lumps of clotted blood, should be taken out with the hands.

It has been before remarked in sect. 1240, where we treated of the perforation of the abdomen and the

chest, that water was not formerly all at once drawn from persons in a dropsy, but at several different times, because it had been observed that fainting fits, syncope, and even death itself, if often followed when the abdomen swelled with gathered water, was entirely evacuated. The reason was then assigned, namely, because the blood might rush into the relaxed viscera and vessels of the abdomen, and so be kept from the brain and the cerebellum: at the same time there was some danger lest the vessels and viscera, after having been long consumed in this watery filth, might be burst by the blood's suddenly rushing upon them. But when the abdomen was insensibly bound harder and harder with a proper ligature, according as the blood run out, it appeared from numerous experiments, that all the water might be drawn at once from a person in a dropsy, and that this was neither followed by fainting nor syncope.

But this likewise obtains after delivery, therefore the same caution is to be observed; it should be taken into consideration however, that after such vigorous efforts, especially in a difficult delivery, that the abdomen being as it were bruised, feels a sort of dead pain, and that the womb itself is affected in the same manner. So that the close constriction of the abdomen may here be hurtful, as *Mauriceau* justly observes^t; he therefore advises to apply the ligature in such a manner, that it may strengthen and support the relaxed abdomen, but not so as to press it too hard. He directs to apply a large square cloth to the whole abdomen, and then to bind it by moderate ligature. The little treatise written by the celebrated *De Gorter* ^u in *Dutch*, upon the binding of the abdomen is worth reading, he wrote it in order to decry the pernicious method in use with women who attend those that lie in of binding them with a girdle, or narrow band about the waist.

^t *Malad. de femm. accouch. Tom. I. liv. 3. chap. 2. pag. 376.*
^u *Van de Sluitband, &c.*

and that very strongly, for foolish old women never act more absurdly than in their attendance upon women in labour. He always saw excellent effects follow from binding the abdomen immediately after delivery with a broad swathe, a table cloth or a napkin; and if in a few hours the swelling of the abdomen beginning to subside, the cloth should begin to stick loosely, it should be gently brought nearer to the abdomen, particular care being taken to avoid a strong compression. He observed that this method diminished the pains which succeeded delivery, and made less clotted blood be gathered in the womb. He perceived likewise, that during delivery the patient went more easily to stool, when otherwise hard excrements are in the colon, the second of the great guts, which is easily widened, gathered to a considerable quantity, which afterwards is not without great pain and difficulty purged off by the anus*.

That another *lætus* should be taken out is self-evident, and the cautions to be observed in such a case, are to be met with in all the authors who have wrote upon the subject of midwifery, whom we have already cited with approbation.

The particles of the secundines and lumps of clotted blood, are to be taken out with the hand. This subject was treated of in sect. 1321. We are advised to pull these out with the hand, because some physicians have made a practice of giving medicines calculated to throw them out, if there be the slightest suspicion of their lying hid in the cavity of the womb; this method is certainly dangerous, as all these remedies are hot and stimulating, and very improper for women who have been just delivered. They should therefore be rather taken out with the hand, if the orifice of the womb be still open, or can be dilated without violence; that whatever clotted blood there be in the womb, may come out with ease. *Moschion* y directs, that the patient, *Decumbat, modice*

L 2

patentibus

* Ibid. pag. 36. & seq. y Spach. gynæc. pag. 5. No. 55. harm. gynæc. part. prior. cap. 17. pag. 14.

patentibus (diductis) pedibus, ut quidquid ex ea exire cepe it, non impediatur: “Should lie down and keep her feet at a proper distance, that whatever is disposed to come out, may have free passage.” Left if the thighs should be kept close, the vagina should be filled with clots of blood, and the discharge of the lochia should by this means be obstructed.

But if these things cannot conveniently be got out, there is some reason to fear least they should rot, and so prove hurtful to the womb, or that the putrefaction being sucked in, a fever should ensue before they come out of themselves. *Recolin*^z, a worthy member of the academy of surgery, in a case of this nature, attempted to inject the cavity of the womb with hot water, by means of a syphon which seems to be both safe and advantageous, as it is attended with no violence. This method was generally successful, as is evident from the cases there related. It is true indeed, this injection of warm water was made upon women who had miscarried, as in cases of this nature the placenta is often retained, and it is so tender that the part which comes out of the orifice of the womb would be immediately broken off, if any attempt was made to pull it out. But there seems to be no reason why this should not be attempted, if after delivery any part of the placenta, or any clotted blood, should be retained in the womb. Warm water softens and dissolves, and it may reasonably be hoped that what is retained, may thus be washed away: but if it does not come out immediately, this advantage at least arises from thence, the putrefaction is thus washed away, and that renders the continuance of the clotted blood, &c. in the womb less dangerous: this injection may be reiterated with safety, and is always to be preferred to dilating the womb by violence.

Hippocrates^a seems to have made use of an injection of this kind when the womb was full of matter, and barrenness

^z Acad. de chirurg. Tom. III. pag. 202, & seq. infœcundis cap. 10. charter. Tom. VII. pag. 850.

^a De

barrenness was the consequence: *Nam pus genituram enecat et corrumpit. Ac proinde pus ex uteris expurgare oportet & uteri tuberculum tollere*: “ For matter, says he, destroys and corrupts generation. “ For this reason it is necessary to purge the womb “ of matter and remove its swelling.” He afterwards adds: *Et uteri hoc modo colluendi; lac equinum coctum per sacculum tenuissimum & purissimum transmissum infundito, idoneo clystere facto*: “ Wombs are to “ be cleansed in this manner; inject them with “ mare’s milk boiled, and transmitted through a bag “ of the purest and cleanest linen, having made a “ proper clyster of it.” In this manner the thinnest serous part of mare’s milk passing through the bag, cleansed the womb. But that *Hippocrates* was for having this serum injected, not into the vagina, but into the womb itself, is evident from hence, that in the womb was that purulent swelling, the cleansing and cure of which he undertook. This is moreover confirmed by the description he gives of the particular sort of syphon which was to be used in the injection, and which he thus describes: *Clysteris quidam summa pars laevis esto, qualis specilli, argentea, supra quam, interjecto parvo spatio, foramen perforetur. Sint autem & alia foramina, hinc & inde singula, æqualiter inter se distantia ex obliqua laterali parte æqualia, non magna sed angusta. Clysteris quidem apex solidus esto, ac reliquum totum cavum sit, quasi fistula cui suis fœminæ vesica aqua calida probe emollita & madefactæ, alliganda est. Ubi eam alligaris, infuso in vesicam lacte, in foramina tenue linteum immittito, ne lac effluat. Postquam occluseris vesicam, alligatam mulieri ipsi, quam clystere lavaturus es, dato. Illa vero, detracto obturamento, in uterum indat. Noscet autem ipsa, ubi indere oporteat. Deinde vesicam manu comprimito, quoad tantum pus foras effluxerit. Id autem manifestum erit, ubi pus non amplius cum lacte exierit; patet enim, cum nulum amplius inest, tunc desistere oportere*: “ Let the “ top of the clyster be smooth like the silver top of a

“ probe; above this let a hole be bored, a small
 “ space being left between. Let there be also other
 “ holes both on this side and that, equally distant
 “ from each other, equal on their oblique, lateral
 “ part, not wide but narrow. Let the top of the
 “ clyster be solid, and all the remainder hollow like
 “ a pipe; to this the bladder of a sow, properly
 “ softened with warm water and moistened, should
 “ be tied; when you have tied it on, pour milk into
 “ the bladder, and stop the hole with a thin piece of
 “ linen, to prevent the milk from running out. Af-
 “ ter you have stopped up the bladder, give it bound
 “ to the woman whom you are to wash with the
 “ clyster; and let her, having opened it, put it into
 “ her womb. She will herself know where it is pro-
 “ per to put it in. Then let her press the bladder
 “ with her hand till all the matter has run out. This
 “ will plainly appear from the matter’s no longer
 “ coming out with the milk, and it is evident that
 “ when there is no more matter in, it is time
 “ to desist.” As the intention of *Hippocrates* was to
 clear the cavity of the womb from matter by wash-
 ing it, he for that reason directed that the lateral part
 of the tube should be bored with several holes. But
 as *Recolin*, by the injection of warm water into the
 cavity of the womb, attempted to dissolve and divide
 the lumps of clotted blood, and by the quantity and
 force of the water to divide the placenta if it hap-
 pened still to stick in any part of the womb, he for
 this reason justly took care that the syphon should
 have but one large hole in the top, and ne’er a one
 in the lateral part.

There occur other passages in *Hippocrates*, which
 prove that he made a practice of injecting the womb;
 but as these are not altogether conclusive, the passage
 last cited, may suffice.

S E C T. MCCCXXIV.

THE pain occasioned by excessive fatigue, is removed by opiate, alcalic or oleaginous remedies, cordials, diluents, and by the external application of anodynes.

The pains which succeed delivery, and are occasioned by the causes enumerated in sect. 1322, are sometimes troublesome enough. The juice of poppies thickened, which is sold in the shops by the name of opium, and likewise its several preparations and the medicines compounded of it, are recommended by many as highly efficacious in allaying these pains. However the use of them is not universally approved of. Some, and those men of great skill in midwifery^b, have spoken against the use of opium and its several preparations.

But if we with attention, and a mind free from prejudice, weigh those symptoms which are observed immediately after delivery, the use of them does not seem entirely to be rejected. In the last efforts of delivery, especially there was a violent agitation of the whole body, the lying-in woman was filled with dread, both on her own account, and that of her offspring, and often with too great pusillanimity, thought herself upon the point of death. It is true, these symptoms after delivery, are sometimes diminished, though they do not entirely cease. The womb which was obliged to make a great effort, in order to force out the foetus, is not at rest immediately after delivery, but continues to be very much agitated, as was observed in sect. 1322, from the remarks of *Ruisch*. Those violent efforts of the woman in labour, whilst the midwife and the by-standers cry out to her to exert herself to the utmost, to

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use

^b Levret l'art des accouchm. pag. 138.

use all her force if she has a mind to preserve herself as well as her offspring, continue longer than one would be apt to imagine. I saw a man just drowning, grasp a stick strongly in his hand; being taken out of the water, and put into a warm bed, he could not change the posture of his hand, and the bystanders might sooner have broken his fingers than have altered it; about an hour afterwards, this convulsion ceased. It has been observed, that the orifice of the womb is often closed fast in lying-in women, so that it cannot be opened in order to take out the clotted blood, or the remains of the secundines without violence. Prudent physicians in such a case, usually wait till that convulsive contraction is either diminished or has ceased.

In this case I have seen all the above-mentioned pains subside by opium, prudently administered, and after a quiet sleep, all those lumps of clotted blood have come out of themselves, and without any trouble. I will freely acknowledge that I have always prescribed opium after delivery, nor did I ever repent of so doing, as I can solemnly testify that I never knew any mischief occasioned by it.

I however made use of opium simply cleansed, and I administered it in a moderate dose at several different times, till the desired repose followed, by which the lying-in women were restored in a most extraordinary manner. But caution is here required, as physicians observe, that a different quantity is required to produce an effect upon different women. No danger need be apprehended in a grown woman from half a grain, and the dose may be repeated as occasion requires. Hence a few grains of opium are diluted in a mixture or potion, which is given by spoonfuls, or these are bruised with absorbing powders, and given to the patient in reiterated doses. Prescriptions are to be found for this purpose in the *Materia Medica*, according to which many such remedies may be compounded.

I how-

I however always abstained from compound opiates, as the *Therica Andromachi*, the *Mithridatium* of *Damocritus*, the *Philonium Mesues*, and such like: partly because they are taken at a single dose; partly because they contain warm odoriferous spices, and the administering of these is not free from danger, as there is in them so different a quantity of opium, though they are all recommended alike. For the *Theriac* contains more opium by one third than the *Mithridatium*; the *Philonium* is much more soporiferous than the *Theriaca* itself, and besides, has in it a considerable quantity of pepper, a very hot aromatic. Now as nothing is required upon these occasions but the efficacy of poppy-juice, it is better to administer it by itself, than mixed with other useless or even noxious ingredients.

But as women in labour sometimes languish and are faint, being quite exhausted by the pains of delivery, aromatics of an agreeable flavour are sometimes administered at the same time, but those of the mildest sort are chosen, or else they are administered in very inconsiderable doses, that with their delightful fragrance they may cheer and strengthen, not hurt, by too strongly stimulating. For this reason, fragrant distilled waters may be given, or a mild decoction of oats and barley, with a fourth part of the draught, consisting of fragrant Rhenish wine (a prescription of the same kind is likewise to be met in the *Materia Medica*) or a drop or two of oil of cinnamon, with sugar pounded a long time in a glass mortar, is added to the powders which are taken in reiterated doses.

To these are added such ingredients as absorb acids, because pregnant women are often troubled with an acid heart-burning, and after delivery, acids are sometimes administered, such as the decoction already praised, or at least things that have a tendency to turn acid, as barley-gruel, oaten-gruel, pap, emulsions and things of that kind; for which
reason

154 Of difficult DELIVERIES. Sect. 1324.
reason these things shall be again recommended in
sect. 1331.

When any of these are administered, the constitution of the lying-in woman is to be taken into consideration; if this should happen to be hot and sanguine, the mildest sort of cordials should be prescribed; on the other hand, more active remedies may be allowed to those of a cold phlegmatic constitution. But care should always be taken not to give remedies of too hot and stimulating a nature: a very pernicious custom has obtained in some places, especially in the country, to give women just brought to bed warm wine, with a large quantity of mace and cinnamon in it, and this aromatic wine they blend with yolks of eggs, and the women brought to bed, drink so plentifully of it, that I have often seen them drunk a few hours after delivery. It is obvious that there cannot be a more dangerous practice. The more prudent give them broths at different times, and in small quantities; this has an excellent effect: they then give them a spoonful or two of fresh oil of almonds, either unmixed or with broth, which is of the highest service if the stomach can bear it; for it makes some qualmish, and then it is better to abstain from oil, and to substitute gentle emulsions from oily seeds in its place, which are of service by diluting, whilst they contain a quantity of oil, are easily born by the stomach, and impart to it kindly nutrition.

As soft repose is so beneficial to women who have been just brought to bed, it is easy to judge what opinion we should have of the custom of preventing lying-in women from sleeping the first three hours after delivery, which has obtained in so many places. Thus prattling women, and sometimes too when they have drank too freely, make a noise about the lying-in woman's bed if she should but wink, and the neighbours testify their joy with instruments of musick, in order to keep her awake. This custom seems

to be derived from hence. It has been already observed, that sometimes after delivery whilst the womb remains flaccid, and does not contract itself, lying in women have suddenly died of a violent hæmorrhage, and the by-standers who thought them asleep, have, contrary to all expectation, found them dead. But if the abdomen be bound with a broad swathe, and the womb shews signs of contraction, there is no reason for any such fear. Besides if a physician or a skilful midwife, should sit by the lying-in woman's bed during those hours, it will quickly appear whether any dangerous accident is to be apprehended; and in case there should, it will be easy to assist the patient, as hath been already said. Prudence directs that the lying-in woman should not be deserted in the hours which immediately succeed delivery; but there is no manner of reason why she should be kept awake with continual noise. Much light is hurtful to lying-in women; it should therefore be diminished to prevent its striking their eyes, in such a manner however, that the physician sitting next the bed, may be able to distinguish whether the patient's face turns pale, or falls suddenly; whether she begins to feel pain; but from the pulse and respiration a skilful physician may easily form a judgment whether the vital force begins to fail. A fainting fit when coming on, may be prevented by a gentle cordial of an agreeable flavour, by drawing the broad swathe which binds the abdomen tighter, as I have frequently experienced.

But as the lips of the pudenda suffer much by delivery, especially in women that are brought to bed for the first time; and if the head of the fœtus should happen to be of a considerable size, or to stick a long time in the passage, in that case a lenient fomentation is required. *Mauriceau* ^c prepared upon warm cinders, a soft cataplasm made of oil of almonds and the yolks and whites of eggs mixed together, which
having

^c Malad. de femm. accouch. Tom. I. liv. 3. chap. 2. pag. 374.

having spread upon a linen cloth, he applied it to the privy parts, and renewed it every three or four hours if there was occasion, he then fomented them during the first five or six days after delivery, twice or thrice every day with a decoction of linseed, barley or soft and emollient herbs; he at the same time cleansed it from clotted blood and other filth: others foment with warm milk: with others warm buttered ale is in use. If the lips of the privy parts should swell with a dropsy, as sometimes happens, discutient remedies may be added to these, as *Elder Flowers*, *Chamomile*, *Sage*, &c.

S E C T. MCCCXXV.

THE patient is liable to an excessive flux of the lochia, from a too great fluidity, or agitation of the blood, and often from substances retained in the womb, which prevent its contraction.

The lochia are said to be excessive when they exceed the usual quantity, therefore to determine any thing with certainty upon this subject, we should know the quantity which comes from the womb in a natural way, which is no very easy matter, as the physician only knows that this discharge is received in linen cloths, or that the bed is defiled by it, and thence forms a conjecture. Wherefore all the authors who have wrote upon the subject of midwifery, are silent with regard to the proper quantity of the lochia; they speak only of what exceeds the proper quantity, or such as are suppressed. *Hippocrates* indeed ^d, (as I observed upon another occasion in sect. 1284, where the quantity of the courses was spoken of) has said, *Prodeunt autem lochia sanæ mulieri satis abunde, primum*

^d De mulier. morb. lib. 1. cap. 71. charter. Tom. VII. pag. 77.

primum atticæ heminae & dimidiæ mensura aut paulo copiosiora, deinde ad ejus rationem pauciora quoad desinant :

“ The evacuations made by a woman in health after delivery, first come out in a quantity capable of filling an attic hemina (three quarters of a pint, or something more, than less in the same proportion till they cease.” We meet with something to the same purpose in another place^e, where the same measure is assigned, but he adds that sometimes there comes out a little more, sometimes a little less. The attic hemina and a half, seems only to be the measure assigned to that quantity of blood which comes out at the first burst after the placenta has been loosened, and is sprinkled on every side *like water poured out upon a table*^f. It is a more difficult matter to determine the quantity of blood that afterwards runs out, as the fomentations, the cataplasms, &c. which are usually applied to the parts, are dirtied by this.

Besides a great diversity is observed, not only in different women in labour, but in the same woman at different times of lying-in. It has been already observed, that strong women and such as are hardened by daily labour, have but scanty courses, and that the particles left after delivery, come from them in smaller quantities, whilst the contrary holds with others who pass their lives in luxurious indolence. But as the womb, whilst it is widened in pregnancy, insensibly acquires more dilated vessels as was said before, the greater evacuations are to be expected after delivery, the more the womb is widened; and this is the reason why the quantity of the lochia evacuated, may in the same woman be different at different deliveries. *Mauriceau*^g has remarked in his aphorisms, which follow like corollaries from his own writings, that lying-in women who have been delivered of bulky children, generally suffer a violent hæmorrhage

^e De natur. puer. cap 5. charter. Tom. V. pag 314, 115.

^f Ibid. ^g Aphor. 58. Tom. I. pag 535.

hage immediately after delivery; because the placenta in such a case is generally larger, and has larger vessels, to which the vessels of the womb being likewise increased in bulk, correspond.

It was the opinion of *Galen*, that, *Fœtum in se meliorem, qua nutriatur, sanguinis portionem trahere, deteriorē relinquere; quæ causa est prægnantibus cacochymice, quam natura post partum evacuat*: “The
 “ fœtus draws to itself the best part of the blood for
 “ its own nourishment, and leaves the rest, which
 “ is the reason why pregnant women are troubled with
 “ bad humours, which are evacuated by nature after
 “ delivery.” And a little after he adds, that therefore, *Lochium seu puerperii purgationem, medici nominaverint, non simpliciter, vacationem*: “That is,
 “ what is thus thrown off is called Lochia, a child-
 “ bed evacuation, and not simply an evacuation.” But though the womb is cleansed by the succeeding evacuations, as will be taken notice of hereafter, yet that blood which flows copiously from the womb, immediately after the separation of the placenta, is pure, but not that blood which has been left behind after the best part has been applied to the nourishment of the fœtus. *Hippocrates*^h has made this excellent observation in treating of the subject now under consideration: *Prodeunt autem velut sanguis a victima si sana sit mulier (ut diximus) et sana futura sit, citoque concrescunt et expurgantur*: “The things evacuated
 “ after delivery come out like blood from a victim, if
 “ the woman be in health, as we observed, and is
 “ likely to be in health, they soon grow together,
 “ and are purged off” He makes the same observation in another placeⁱ: *Si vero sana non sit mulier, neque sana futura purgatio tum parcius tum specie deterior prodit ne cito concrescit*: “But if the woman is
 “ neither in health nor likely to be so, there comes
 “ a more

^h De mulier. morb. lib. 1. cap. 71. charter. Tom. VII. pag. 771.

ⁱ De natur. puer. cap. 5. charter. Tom. V. pag. 315.

“ a more scanty evacuation from her, and one of a
 “ worse sort, nor does it so soon come to a confis-
 “ tence.” This is an indication of vicious humours,
 for this blood runs out with all the qualities which it
 had whilst it flowed through the vessels of the preg-
 nant woman, so that it will be well-conditioned if she
 be in health. This should be particularly attended
 to, that it may be thoroughly understood in what
 state the lochia are in the womb, and what changes
 they undergo afterwards, though they continue to
 be called by the same name.

The too great quantity of these particles is chiefly
 considered at the time that immediately follows deli-
 very; for then the greatest danger is apprehended
 from them: for in the natural order these particles
 are less red a few hours after delivery, and this red-
 ness is insensibly diminished, so that the red colour on
 the third, the fourth or the fifth day, goes off in-
 tirely^k. For the womb being insensibly more and
 more contracted, diminishes the capacity of its ves-
 sels. So that the too great flux of the lochia is known
 by the blood's bursting out with over great violence,
 immediately after delivery, insomuch that the face
 suddenly grows pale, the eyes are darkened, the ears
 tingle, a fainting fit comes on; it is likewise known
 if the blood flows out at first in a moderate quantity,
 but continues to flow longer than usual, and does not
 change its colour for some hours.

The too great agitation of the blood occasioned by
 fatigue undergone, fear or other passions of the mind
 may contribute hereto; this shews the utility of
 opiates by which such an agitation is happily allayed.
 To these causes is likewise added the too great fluid-
 ity of the blood, which even when the vessels are con-
 tracted, causes the blood to flow on. But it is gene-
 rally known that in healthy and robust persons, the
 blood

^k Levret l'art des accouch. pag. 134. Brudenell Exton, pag.
 409.

blood is dense and solid, and that it quickly coagulates when it runs out of the vessels.

But such a state of the blood supposes the vessels to be firm and robust, whereas on the contrary, the blood is thin and more fluid than ordinary, when the weak vessels act less powerfully upon the blood contained in them. Wherefore if the blood, which runs out, quickly coagulates, it is a sign both of present and future health in the lying-in woman.

But in flaccid and soft bodies, the empty womb contracts itself more weakly and more slowly; whence there follows a too great flux of the lochial discharge. *Hippocrates*¹ seems to have hinted at this in the following passage: *Quod si mulier a partu, paulo amplius quam par sit purgata fuerit (id enim contingit si uteri lato ore fuerint, ut ex venis ex utero tendentibus quædam ex violento fœtus egressu perruptæ fuerint, &c.*

“ But if a woman after delivery should be purged
 “ rather more than enough (for that sometimes happens when the wombs are broad-mouthed, so that
 “ some of the veins which go to the womb, are
 “ broke by the fœtus’s coming out with violence,
 “ &c.”) But if the orifice of the womb should continue wide, it is a sign that it does not sufficiently contract itself, and that therefore the vessels continue a long time open. It is moreover evident, that the vessels of the womb may be injured by the violent and sudden coming out of the fœtus, as also by violently pulling out the placenta, or when sticking fast to the womb it is separated by a rough hand, and so the substance of the womb itself is torn, as has been said before. But a too great evacuation of the womb after the birth of the fœtus, is most commonly caused by the things retained in the womb, for then the contraction of the womb is impeded, and yet it is constantly irritated and excited to contraction; especially if the things retained are partly pushed into the orifice of the

¹ De mulier. morb. lib. 1. cap. 43. charter. Tom. VII. pag. 754.

the womb, yet without being forced through it. It is sometimes observed, after the first effusion of blood which follows delivery, that the mouth of the womb is contracted, and that the blood which runs in the womb, gathers into a clotted lump, which soon fills the whole cavity of the womb, and then little or no blood runs out. But when this clotted lump is forced out, there then again flows out a considerable quantity of blood, because the vessels have not yet been sufficiently contracted. This sometimes happens again and again, but the more the womb contracts itself, the less the lumps are that come out, and at last these evacuations become moderate.

Such a great loss of blood is followed by many ill consequences; especially if the lying-in women are by constitution weak and delicate. We have already shewn that an ill habit of body, a redundancy of bad humours, a pituitous dropfy, and stagnations of watery humours in the habit of the body, are the consequences of a copious hæmorrhage. *Hippocrates* has remarked the same thing with regard to the too great evacuations of the womb after delivery: *Eam levis febris & rigor prebendit, calorque toto corpore; nonnunquam etiam horror, & cibi fastidium, & omnino execrabitur, & tenuis erit, & debilis, & pallida, & tumida; & cibos averfatur; si quid vero edat aut bibat, non coquitur*: “A slight fever and a cold fit seizes her, and then a heat all over the body; sometimes likewise horror and a loathing of food which she will detest; she will be thin and weak, and pale and swelled; she will nauseate victuals; but if she should eat or drink, she will not digest.” It has already been frequently remarked, that a certain quantity of good blood is required, that from the crude food taken in benign humours may be formed, by which nature's losses may be repaired; from whence it is evident that there is a universal de-

generacy in the body after a sudden and considerable loss of good blood.

But as so great danger is to be apprehended at the beginning of delivery from a copious discharge of blood, and so many ill consequences sometimes attend it, it may perhaps be thought that the same danger is to be apprehended from continued evacuations of the womb after delivery, though those evacuations should not be so considerable. But it should be taken into consideration that that danger is doubtful, because by a sudden flowing of the blood, the vessels collapse, and scarce any arterial blood comes to the brain or the cerebellum, nor have the vessels time to contract themselves, and they remain full, though the quantity of humours be but small, and thus the circulation of the blood continues undisturbed. Even a robust man will faint upon losing two pounds of blood at once; but this will not be the case if he loses three ounces a day for eight days together. Add to this, that so long a delay affords time for cure, whereas sudden death is sometimes the consequence of a profuse hæmorrhage after delivery.

Authors are not however agreed with regard to the time that the evacuations which follow delivery, should last. The duration of these evacuations has been determined according to the different sex of the child brought forth by Hippocrates, ⁿ in this manner; *Nam et purgatio a partu fit mulieribus ut plurimum, in puella quidam concepta, duobus et quadraginta diebus, eaque, ut maxime diuturna, ita perfecta est. Extra tamen periculum fuerit si etiam quinque et viginti diebus purgetur. In masculo vero purgatio diebus triginta contingit, sicque hæc longissima et perfecta est. Extra tamen periculum fuerit, si diebus viginti purgetur. Postremo vero tempore, quam paucissima purgatio procedit:*

“ Evacuation after delivery lasts generally in women
 “ who have born a girl two and forty days, and this
 “ being the longest purgation, is compleat. But

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“ there

ⁿ De natur. puer. cap 5. charter. Tom. V. pag. 314.

“ there is no danger if it should not last twenty-five
 “ days. When a male child is brought forth, the
 “ evacuation lasts thirty days, this is its longest du-
 “ ration, and thus it is compleat; there is no danger
 “ however if the purgation should be over in twenty
 “ days. But the last time the purgation is shorter
 “ than ever.” If the rest of the passage be read, it
 will appear evidently that *Hippocrates* has not deter-
 mined the time of these evacuations from his own
 observations, but from an hypothesis that as many
 days should be allowed to this evacuation as pass be-
 tween the first conception of the child and its perfect
 formation, that is, till the different limbs are to be
 distinguished. But *Hippocrates* has thought proper to
 allot the space of two and forty days for a female
 child, and thirty for a male, that this formation may
 be completed. What induced him to this, it is
 not easy to discover. *Duretus* ° was of opinion, that
 as many days should be allotted to the evacuations
 after delivery as would have been required by the
 menses if the woman had not been with child. *Nam*
quæ sunt biduo menstruales, ut sunt viragines, dies octo-
decim exigunt in puerperiis; quæ tribus, viginti septem;
quæ quatrIduo, triginta sex; at menstruales quinque
dierum, fere sunt puerperiales ad quadragesimum quintum
diem a partu: “ For those whose monthly flowings
 “ last two days, as for example, women who are
 “ somewhat masculine, are eighteen days in child-
 “ bed; those whose monthly flowings last three days
 “ are twenty-seven days in child-bed; those in whom
 “ they last four days are thirty-six days in child-bed;
 “ but those whose monthly flowings last five days,
 “ are seldom entirely evacuated till the forty fifth
 “ day after delivery,” It was his opinion that the
 evacuations after delivery should be looked upon,
Esse reliquias emortuas menstruorum, in venis majoribus
Et circa uteros, stabulantium, quas per graviditatem in-
corruptas servavit amplificatio caloris nativi a fœtu con-

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cepto:

° In coac. Hippoc. tractat. 3. No. 4. pag. 444, 445.

cepto: “As dead leavings of the menses remaining
 “in the larger veins and about the womb, which
 “have been preserved uncorrupt during the time of
 “pregnancy by the increase of native heat, occa-
 “sioned by the conception of the foetus; and that
 “for that reason they should be purged off.”

But it is sufficiently evident that all these inferences are drawn from a preconceived opinion, and not from accurate observations. The womb at the time of pregnancy is stretched, and its vessels are dilated: after delivery all its parts should return to their first size and magnitude; and so the vessels should be contracted in such a manner as to admit, and to let out less blood. The evacuations of the womb after delivery answer this end, that the vessels of the womb being thus emptied, may be contracted. The stronger therefore the vessels are, the less force the vessels of the womb are impelled with, the shorter time will the evacuations after delivery last. For this reason such women as give suck to their own children, make less considerable and less lasting evacuations after delivery than others: for the same reason these evacuations are diminished in such women as are of robust constitutions, hardened by labour and violent exercise; but in those who are weak and lax, they are copious and lasting. Wherefore *Mauriceau*^p has determined that no constant rule is observed in this case, and that no diversity is occasioned by the varying sex of the child, but that the evacuations after delivery are generally at an end in fifteen or twenty days. *Levret*^q confirms, that by his observations, and at the same time with great good sense informs us, that after the milk-fever, and before the customary monthly evacuations return, it often happens that blood flows again from the womb, but without doing any hurt. He however thought that this generally happened in such women as were of a bad constitution,

^p *Traite des malad. de femm. gross. liv. 3. chap. 9. pag. 414.*
^q *L'Art des accouchm. pag. 135.*

constitution, or when their monthly evacuations return in an irregular manner. Yet I have observed the same thing in women of the best constitutions, and in those whose monthly evacuations were entirely regular. Nor will this appear surprising, if it be taken into consideration that the vessels of the womb had been greatly distended towards the latter end of the time of pregnancy, and though they were afterwards contracted, did not immediately recover their first firmness, but still for a time easily give way to the impelled humours; hence the extremities of the vessels of the womb being dilated by a slight cause, pour out blood. Thus when a woman does not give suck to her own child, the swelling of the breasts beginning to subside, a bloody evacuation of the womb returns, and often continues for several days. For the same reason the monthly evacuations after delivery is over, are generally more copious than they were before.

S E C T. MCCCXXVI.

IF by things retained in the womb, these are to be got out (1323.)

This subject has been already treated of as far as an immoderate evacuation of the womb after delivery is occasioned by clotted blood, another foetus or the secundines remaining in the womb.

It does not seem improper in this place to say something of that fleshy substance called the *Mola*, because this too is generally reckoned amongst those things, which being retained in the womb, may prove hurtful. It is well known that strange stories are told by women concerning the *Mola*; as that these *molæ* not only have the figures of various animals, but likewise are capable of animal motion, such as flying, running, seeking places of retreat, &c. that

such molæ have attempted to return quickly into the womb, from whence they had been driven just before; and that if this was not prevented, the wretched woman in labour, would be threatened with certain destruction by this monster: nay more, when a talkative and unskilful midwife has been talking about the mola, I have known the women who were to have assisted the person lying-in, run away in a fright, being seized with fear lest that monster should seek a lurking hole about them. Many such stories are told which I should be ashamed to relate.

If the womb should swell, as happens frequently in women with child, and yet no human foetus be contained in the womb, this such authors as have wrote upon the art of midwifery, call a false conception and a spurious pregnancy. For this reason a dropsy of the womb and a tympany, whilst the womb is distended by the elastic air shut up in it, are reckoned amongst false conceptions^r, but this name has been chiefly given to the solid, and as it were, fleshy masses which issued from the womb after the symptoms of pregnancy; these were generally of an irregular form: these were properly called molæ.

It was a very general opinion, and approved of by authors worthy of the highest regard, that by the commerce of the two sexes, there was sometimes produced instead of a human foetus, such a deformed mass, which totally degenerates from a natural conception. *Hippocrates*^s has described it in this manner: *At molæ conceptus hæc causa est. Quum copiosi menses extiterint, et paucum ac morbosum semen conceperint, tum minime genuinus conceptus gignitur; tum venter tanquam utero gerentis, impletur, nihil autem in ventre movetur, neque in mammis lac generatur; pectus vero turgescit. Hæc igitur biennium sæpe etiam triennium, sic affecta est. Et siquidem una caro nascatur, mulier perit (neque enim superesse potest) sin vero multæ copiosus*

^r Levret L'Art des accouchm pag. 184.
 morb. lib. 1. cap. 70. charter. Tom. VII. pag. 770.

^s De mulier.

copiosus ei sanguis, & carnosus, per pudendum erumpit. Quod si id moderate fiat, servatur; alioqui profluvio correpta perit. Atque ea quidem est hujus morbi conditio. Discernere autem oportet plenitudine, quodque in ventre non moveatur: “ But this is the cause of the conception of the mola. When the menses are very copious, and the seed they have received, is scanty and vitiated, then a conception by no means genuine is formed; then the belly is as it were, filled with the womb, but nothing moves in the belly, nor is milk generated in the breasts; but the chest swells. The woman therefore continues in this state for two, often for three years. And if a single fleshy lump is generated, she perishes (for it is impossible she should recover) but if many such substances are generated, thick blood bursts out copiously at her pudendum. If this emission be moderate, she escapes; otherwise she dies of the excessive loss of blood. This alternative always attends this disease. But it may be discerned by the plenitude, and by there being no motion in the belly.” He speaks to the same purpose in another place ^t, excepting that there we read: *Neque lac in mammis generatur, ipsi tamen mammae turgent:* “ Nor is milk generated in her breasts, but her breasts swell;” whereas the words in the former text are, *Pectus turgere*, “ the chest swells.” These were then the symptoms from which *Hippocrates* conjectured the formation of a *Mola*, if the abdomen swelled, and yet the motion of the foetus was not perceived at its proper time, and if at the same time the breasts swelled, and no milk was generated in them notwithstanding. For provident nature at the very time of pregnancy, prepares food for the new-born creature. But when a *mola* is generated, that would be unnecessary, as there would then be in the womb an unformed mass, and not a human foetus.

M 4

But

^t De infœcundis cap. 16. *ibid.* pag. 855.

But it likewise appears that various tumours generated in the substance of the womb itself, have been called *Molæ*. For *Aetius* ^u has thus described them: *Quæ mola vocatur, affectus quidem uteri est, ad scirrum tendens, interdum post inflammationem præcedentem eveniens, interdum post locale ulcus cui caro superexcrevit; a motus autem graviditate & difficultate molæ nomen assumfit. Affectum tumor immitis consequitur, cum hypochondriorum retractione, gracilitate, decoloratione appetendique dejectione: ac primo conceptionis opinio suboritur, &c.* “What is called the mola, is a
 “ disposition of the womb tending to a scirrhus tumour, it sometimes has its rise after a preceding
 “ inflammation, sometimes after a local ulcer, over
 “ which, flesh has grown; it took its name of mola
 “ from the slowness and difficulty of its motions; an
 “ obstinate tumour follows this disposition, together
 “ with a drawing back of the hypochondria, leanness, a faded complexion, loss of appetite, and at
 “ first there arises an opinion of conception, &c.” it is manifest that he in this place, calls the lumps of corrupt flesh which grow in the substance of the womb, *molæ*. He soon after adds what follows: *Trahunt nonnulli, in quibusdam mulieribus carunculas ad juglandis magnitudinem per pudendum excerni solitas, interdum singulis mensibus, interdum bimestres et trimestres. Hanc ægritudinem alii tanquam insanabilem penitus reliquerunt, alii inchoantem tantum curari posse confidunt:* “Some authors tell us, that in certain women, lumps of flesh of the size of a walnut, are
 “ voided by the pudendum, sometimes every month, sometimes every two months, sometimes every
 “ three months. Some have given up this disorder
 “ as utterly incurable, others think it can be cured
 “ only in its beginnings.” It seems probable that abortion is here hinted at; but after he has described various fomentations, baths, suppositories, &c. partly of an emollient, partly of a stimulating nature, he

^u Lib. 16. cap. 82. pag. 161.

adds: *Quibus peractis, frequentissime plurima atrī & grumescētis sanguinis copia exit & morbus dissolvitur. Philosophus vero detentis inquit, uxoris amici menstruis, primo cum concepisse arbitrabar, postea exaēto magis tumore, hydropem suspicari cēpi, cum totum corpus tumefieri cernerem: at tandem ubi id esse morbi genus deprehendi, quod alii plinthum, alii molam appellant, rutam et anethum in vino antiquo odorato decoxi, atque inde herbis abjectis vinum calidum propinavi, prope aquae loco kujusmodi offerens; statimque mulier, excreta cruoris copia, salutem adeptā est:* “ This being over, “ there often flows out a quantity of black and “ clotted blood, and the disorder is dissipated. But “ a philosopher says, the monthly flowings of my “ friend’s wife being retained, I at first thought she “ had conceived, afterwards, the tumour being increased in bulk, I apprehended there was a dropsy “ in the case, when I perceived that the whole body “ was swelled: but when I at last found that it was “ a species of disease which some call plinthus, and “ others mola, I made a decoction of rue and anniseed in old fragrant wine, and then having thrown “ out the herbs, I offered her the warm wine, as if “ it had been so much water; and the woman immediately recovered, after having voided a great “ quantity of blood.” Certain it is, that neither a scirrhus tumour in the womb, nor an ulcer, are to be cured by a copious hæmorrhage, which is rather a bad symptom, as it shews that the vessels are eat away by a sulphureous, watery humour, and that therefore all sorts of ill consequences should rather be feared than recovery hoped for.

Many observations evince that miscarriages have often been mistaken for molæ. *Mauriceau* himself*, though he ascribes the origin of the molæ to the corrupt seed of both sexes, and makes a distinction between them and false conceptions, acknowledges, notwithstanding

* *Traite des malad. des femm. gross. liv. 1. chapit. 10. pag. 109 & seq.*

notwithstanding that he has found by reiterated experiments that those conceptions which are called false, were true conceptions on the first days after the woman was impregnated; and that therefore they were only little placenta's, whose membranes were stuffed with coagulated blood; which being drained of the humours contained in them, and compressed by the contraction of the womb, acquire the figure of the hollow womb itself. But the foetus is not found, because being void of life, it dissolved through it's thinness; or the humours having burst out, slipped away in the shape of filthy corruption. It is well known that the smallest embryos, except they are suspended in some fluid concave, entirely lose their form.

From what has been said, it is evident that the molæ do not spring from corrupt seed, as it is acknowledged^y that both they and false conceptions differ from each other only by their longer delay in the womb. For if these little placenta's, being left, should come out in the second or third month, then *Mauriceau* calls them false conceptions; but if they should remain longer in the womb, and be increased in bulk, then he would have them called *molæ*. We are told in a more accurate manner^z, that a miscarriage is thrown out two different ways: either in the shape of an egg or a *mola*: *Aliquando membranaceam vesicam refert, majorem, minoremve prout longius breviumve fuit post imprægnationem intervallum, & ovo subventaneo non dissimilem, nisi quod extrinsecus obfessa sit rudimento placentulæ. Hoc rudimentum leviter sanguine suffusum apparet, qui facile inde ablevitur, dummodo in aqua frigida molliter concutiatur, & si aliquando frustulum coagulati cruoris alicubi tenaculis plerumque amoveri se patitur:* “ Sometimes it appears like a
“ membraneous bladder, greater or less, according
“ as the interval after impregnating is longer or
“ shorter, and not unlike an addled egg, excepting
“ that

^y Ibid. pag. 111.^z Noortwyk de utero gravido, pag. 119.

that on the outside it is surrounded with the first coat of the little placenta. This coat appears to be slightly suffused with blood, which is easily washed from it, if it be gently shook in cold water, and if a lump of coagulated blood should stick anywhere too tenaciously, that is, generally speaking, easily taken off by a pair of tongs." This is exactly what *Mauriceau* called a false conception.

But when the miscarriage comes out in the form of a *mola*^a, in that case, *Malsam representat sanguinis rubri valde compactam, quæ nullo artificio, mihi hæcenus cognito, solvi potest*: "It represents a mass of red blood very compact, which cannot be dissolved by any artifice I have yet discovered." But this mass consists of irregular segments pressed hard together. The little stems of the diminutive placenta of the egg it keeps within its substance in such a manner, that but one can be got out from thence, and that always more or less torn; but it never can be got out entirely. Such a *mola* is therefore a natural conception; but the human egg is so bound by blood poured out and coagulated, and so compressed by the contraction of the womb, that the roots of the little placenta are altogether entangled, and the membranes may be easily broken, that the humours may be poured out, together with the little embryo; or if it be left in, it may be so compressed as no longer to be distinguishable. For the mass which surrounds the eggs is not every where of the same thickness, but it is much thinner near the border of the little placenta; so that the membranes may be easily broke in that part, as it resists less. But when such a *mola* is properly dissected, the foetus is found in the amnium, far pressed in: *Habeo talem molam, in qua primo adspectu embryonem invenire non poteram, tandem obvium; exiguus scilicet, grano hordei vix major, abscondebatur inter inæqualitates amnii irregulariter intro-*
pressi:

^a Ibid. pag. 120.

pressi: sed et alterum habeo, qui ovo suo, licet molæ, satis proportionatus, priorem pollicis articulum longitudine æquet torosus: “I have a mola in which, at first view, “I could not discover an embryo; at last it appeared, though it was but small, scarcely bigger than “a grain of barley; it was hid amongst the inequalities of the amnium irregularly pressed in; but I “have another likewise, which though in it’s egg “it is proportioned to the mola, is so fleshy that it “equals the first joint of the thumb in thickness ^b.”

It sometimes happens that coagulated blood, sticking to the egg, does not go round it’s whole surface; whence in some part of such a mola, there generally appears a thin pellucid membrane, through which the contained embryo, swimming in the liquor of the amnium, is plainly perceived. Such a mola is described by *Denys*^c: this little membrane contained about two spoonfuls of fluid; this he compares to the liquor of the pericardium: the white embryo equalled two fingers breadth in its length. I have seen many embryos contained in their proper membranes; some I have kept, and I have carefully observed whether they were very little, because then the whole external surface of the egg appears rough, and sends from it little branching fibres: in those of a larger size, some part of the surrounding membrane is without these little fibres, and is pellucid. When that embryo equalled two joints of the little finger, some part of the egg was without these little fibres; therefore the clotted blood should the less stick to it: and in the remaining parts of the egg it stuck fast to the little fibres. Hence, though the whole mola had the appearance of a fleshy, solid mass, in the lower part there appeared a pellucid membrane of half the size of a shilling. But this membranous part appears to have been a lower part of the egg,

next

^b Ibid. pag. 121.

^c Over hetampt der Vroedmeesters en Vroederouwen. 8^e. hoofdstuck. pag. 170, 171.

next to the orifice of the womb, as appears from the description.

This woman had suffered a considerable hæmorrhage, and violent pangs of delivery; wherefore it is not to be wondered at, that the blood having got among the little fibres, which bind the external membrane of the egg, should be, by the powerful contraction of the womb during the pangs of delivery, changed into such a mass, as it were fleshy, dense, thick, and broad, in the upper part, thinner and narrower in the lower part, so as in figure to resemble the human heart pretty nearly, with a thin membraneous and pellucid top:

But *Denys*^d was of opinion, that from the first delivery, part of the placenta remained fixed to the womb, which grew into a bulk, to which afterwards, the woman being impregnated, the egg stuck together with the embryo contained in it. But it is sufficiently evident from what has been just said, in what manner such a mola may be generated, without supposing part of the placenta to remain after the first delivery.

At the same time, the reason is known why there is frequently no embryo found in such a molæ. For that thin membraneous part, either covered with no blood, or with but little, the womb being contracted at the time of the pains, is easily broken, and the tender embryo rolls out with a considerable quantity of blood; or if it remains, being fixed to the egg by the navel-string, the humours by which it was preserved from pressure being run out, it is in such a manner compressed by the contracted womb, that it disappears, as it were; especially if blood should enter the egg evacuated of the humours: for it is well known that a hæmorrhage of the womb accompanies the exclusion of the fœtus. No one
who

^d Overhet ampt. der Vroidmeesters en Vroedvrouren, 80
hoofdstuck, pag. 171.

who has not attempted it can know how difficult a matter it is to disengage the little embryo from such a mass of thickened blood: it moreover often happens, that it is sought for in vain, having already slipped through the broken membranes. Not long since it took me up three hours to discover an embryo in such a mola, which had been driven out on the eighth week after conception. Midwives want address; and physicians are so much taken up with their practice, that they want time, and perhaps patience, to investigate these things. Wherefore it is not to be wondered at, that the mola has been considered as an unformed mass, and a false conception, as nothing organical was discovered in it. But it is evident from what has been said, that they had been true and natural conceptions, but that they had, by the circumambient blood and the contraction of the womb, been changed in an extraordinary manner, and driven out by abortion.

It appears from hence what we should think of the symptoms of the mola or of false conception, whereby it may be distinguished from the true. Many authors who have written upon midwifery have enumerated these; as also *Lamzeerde*^e, who has written a particular treatise upon the molæ. Almost all these acknowledge, *Molæ signa diognostica cum signis veræ imprægnationis bene coincidere*: “That the diagnostic symptoms of the mola generally coincide with the symptoms of true impregnation.” But the other symptoms enumerated are of such a nature, *Ut ad minimum æquivoca sint*, “That they are at least equivocal^f.” The same excellent author admirably explains the manner in which a miscarriage or its remains are changed into a mola; and hence some conclude, but not very wisely, that it was a false conception, and not a true impregnation^g. Certain it

is,

^e *Histor. natur. Molar. uteri*, cap. 16. pag. 148.

^f *Levret l'art des accouch* pag. 180. ^g *Ibid.* pag. 62, 63.

is, that *Ruyſch*^h, a person of ſo much diſcernment in theſe matters, whilſt he, by order of the magiſtrates, examined all the midwives of the populous city *Amſterdam*, that he might prevent the ill effects of their ignorance, made an accurate reſearch into the hiſtory of the *molæ*, carefully examined many that were brought to him, and at laſt concluded, *Verofimile admodum eſſe, molas ita ducantatas nil aliud eſſe, quam ejuſmodi carnoſas uteri excreſcentias, aut placentulas retentas & ab utero, ubi ſupra innui, compreſſas; neuti-quam vero ex mala conceptione orſis*: “ That it is very
 “ probable, that the *molæ* ſo much talked of are
 “ nothing elſe but the fleſhy excreſcencies of the
 “ womb or little placenta’s retained, and, as I hint-
 “ ed above, compreſſed by the womb; but never oc-
 “ caſioned by bad conception.” Such fleſhy excrescencies ſprung from the very ſubſtance of the womb, being in reality ſarcomas, have often been looked upon as *molæ*: *Sarcomata, inquam, quia præter carnem in illis nihil deprehendi: ejuſmodi excreſcentias uterinas per pedunculum utero adherentes obſervavi in ipſo utero, dum mulieres in partus doloribus eſſent, & excretarum iconem exhibeo. Illud vero neutiquam mirandum, quandoquidem in ipſo etiam ſtomacho, & veſica urinaria, ejuſmodi corpuscula excreſcere obſervavi*: “ Sarcoma’s,
 “ I ſay, becauſe I have found in them nothing but
 “ fleſh: I have obſerved ſuch excreſcencies of the
 “ womb ſticking by a ſtem to it, whilſt the women
 “ were in the pangs of delivery, and I exhibit the
 “ figure of them when out: but this is by no means
 “ to be wondered at, ſince I have obſerved ſuch
 “ lumps growing even in the ſtomach and the uri-
 “ nary bladder.” If what the celebrated *Levret*ⁱ has ſaid upon theſe ſubjects be compared with this, I mean thoſe paſſages in which he points out an admirable method for the cure of theſe diſorders by liga-
 ture;

^h *Obſervat. anatom. chirurg. obſervat. 28, 29. pag. 25, & ſeq. & obſerv. 58. pag. 54.* ⁱ *Obſervat. ſur la cure radic. de pluſieurs polypes de la matrice, &c.*

ture; as likewise what the same author has elsewhere written upon this subject ^k, it will appear evidently that these sarcomas of the womb occur more frequently than was formerly thought, and at the same time that they were often described as molæ even by men of skill. For though such tumours generally require a skilful hand to remove them, it however sometimes happens that they are separated of their own accord and fall off: of this many examples are to be met with in the same place. It seems highly probable that that mola, of which a description and figure is given in the *Acta Parisina* ¹ was of the species of sarcomas or polypusses of the womb. The history of this mola was sent by the academy of *Montpelier*. The stem from which the whole mass of the tumour hung, appears plainly in the figures of this mola; and if their history be compared with those accounts we meet in the Memoirs of the Royal Academy of Chirurgery ^m, scarce any doubt will remain.

'Tis moreover to be observed, that if an embryo of two or three months should slip out, the membranes being broken, and the secundines should remain, as often happens, as the aperture of the womb is sometimes so small, that these cannot be taken out without a violent dilatation of it, the secundines then sometimes degenerate in an extraordinary manner. The celebrated *de Gorter* ⁿ has admirably observed, that if a little embryo should die, the whole vital flow of humours does not cease in the placenta, which receives blood from the womb: so that if it should continue to grow, and should after a certain time be separated from the womb and forced out, there comes out an unformed mass, which is called the mola: but as in little embryos the bulk of the placenta is, in

^k Memoir. de l'academ, de chirurg. tom. 3. pag. 518, & seq.

¹ Academ. Royal des Sciences l'ann. 1735. Mem. 770, 778.

^m Loco modo citato. ⁿ Van de Sluytband der kraemvrouwen pag. 41.

proportion, bigger than in a mature foetus, he for that reason compared it to the seminal leaves of plants, which are of more considerable size, and prepare nourishment for the tender plant, till it is able to subsist itself; for then these being become useless and dried, fall off: but as these seminal leaves can subsist without the assistance of the rising plant, he imagines that the placenta can subsist in the same manner, the embryo being destroyed. It is confirmed by the observations of *Ruisch*, that the placenta may continue a long time in the womb, and degenerate into little watery bladders°. He moreover observes, that, *Placentulas, duorum, trium, quatuorve, mensium abortus, ita indurari, talemque adipisci formam ut pro molis habeantur ab imperitis, modo diutius, quam par sit, aut per dies aliquot, in utero hæreant*: “The little placenta’s of a miscarriage of two, three or four months, are so hardened, and take such a form, that they may be looked upon as moles by the unskilful, should they stay in the womb a little longer than proper, or for some days.” He has given figures of these lumps called *Molæ*, and at the same time he remarks, that by the compression of the womb, *Carne musculosa solidiores evadere*: “They become more solid than muscular flesh.”

But *Ruisch* farther observes^p, that the coagulated blood retained in the womb, is made very hard by the womb’s compression: *Cui sæpissime membranæ analogum quid appensum invenitur, sicut, post venæ sectionem in pede institutam, aquæ innatare videmus*: “Hung to which is often found something resembling a membrane like what we see swimming upon the water, after a person has been bled in the foot.” He has also given us figures of the masses of coagulated blood degenerating. I have often seen such masses thrown out in the first days of lying in; these resemble a pellucid, glutinous juice of the thickest sort, but which is easily agitated by the slightest motion;

° Observat anatom chirurg. No. 128. pag. 26.

Ibid. observat. 29.

this terrified the women standing by, and made them swear that the mola had been alive, and that they were eye-witnesses of this. But if coagulated blood should remain a long time in the womb, it becomes more dense, the subtle parts are forced out, and a sulphureous, watery humour, resembling what is washed off of flesh, comes from the vagina; then a tenesmus follows, and a mass is forced out, whose lower part had often stuck in the neck of the womb for some hours; it is formed into a top which had there been less pressed, whence it the more resembles blood of a dark hue which is still tremulous, whilst the remainder of the mass is rendered more solid by the compression of the womb, and its redness becomes less deep. Whilst such a mass comes out, it is a difficult matter to persuade those present, as well as the lying-in woman, that it is not a mola, nay, even a living animal. They are confirmed in this opinion by the lying-in woman's finding great relief, whilst the womb is freed from the bulk by which it was loaded. It is easy to judge from hence, what we should think of all the stories which are told of women in labour, who have been delivered of a mature foetus, and afterwards of a mole.

It being therefore evident from what has been said, that a miscarriage, and the corrupted leavings of the secundines, the coagulated blood, and the sarcomas of the womb, have often been taken for mola's; is there any occasion for having recourse to the invention of a monster formed by the corruption of the seed and the monthly evacuations? I indeed know no history of the mola, though I have read several, which may not be satisfactorily explained by the causes enumerated above. Is the distinction made by *Lamsweerde* ^a a good one? *Mola duplex est, una generationis de qua hic agitur; altera nutritionis:* "The mole is twofold, there is one of generation
I which

^a *Histor molar. uteri, cap. 1. pag. 13.*

“ which is treated of here, and another of nutrition.” He acknowledges that in the wombs of virgins, fleshy tumours may spring from the matter of nutrition, and these he would have us call *molæ nutritionis*: “ moles of nutrition;” but we meet with the following conclusion in that author, concerning the *molæ* of generation^r: *Molarum materia conceptionis & formationis est genitura morboſa, ſive ſemen utriuſque ſexus certis particulis deſtitutum, in uteri aream effuſum: materia nutritionis eſt ſanguis menſtruus affluens*: “ The matter of the mole is a diſeaſed production, both in conception and formation, or “ the ſeed of both ſexes deſtitute of certain particles, “ poured out into the area of the womb: the matter “ of nutrition is the blood of the menſes flowing in.” He therefore lays it down as a rule, that coition is abſolutely neceſſary to the production of the mole of generation. *Fernelius*^s was of the ſame opinion; this is his definition: *Mola tumor eſt carnoſus, non in ſubſtantia, ſed in uteri capacitate, genitus*: “ The “ mole is a fleſhy tumour, generated not in the ſubſtance, but in the capacity of the womb:” thus he excludes thoſe *Molæ* which *Lamſweerde* calls *molæ* of nutrition; but he alſo lays it down as a rule that coition is neceſſary to the production of a *mola*, theſe are his words: *Molæ cauſa eſt viri ſemen, idque aut corruptum, aut quovis modo invalidum; quod alimentum quidem trahere, nihil vero conformare poteſt*: “ The “ cauſe of the mole is the ſeed of the man, and that “ either corrupted or ſome way defective; which “ may bring nourishment, but can form nothing^t.”

It is certain that all thoſe maſſes called *molæ*, which contain a human embryo, and thoſe which are formed by the corruption of the little placenta left in the womb, cannot be produced without coition. But it is equally certain that the ſarcoma's of the womb, and the maſſes that ſpring from clotted blood, may

N 2

be

^r In fine capit 10. pag. 104.
pag. 194.

^s Ibid. pag. 195.

^t Patholog. lib. 6. cap. 15.

be generated without any coition. But as these are comprised under the general name of molæ, it is evident that the name of molæ should be used with great caution, lest untainted virgins and chaste widows, should be branded with the infamy of incontinence. *Ruisch*^u bears witness, that, *Ejusmodi molas a virginibus (aut saltem de quibus nulla alia erat suspicio) fuisse exclusas*: “That such moles have been “forced out by virgins, or at least, by such as were “not suspected of being otherwise.” He gives us the figure of such a mole, which in its narrow neck, resembles a sarcoma or polypus of the womb. He likewise observed that, *Vetulas viris non utentes aliquando in lucem exposuisse tales molas*: “Old women “who have no commerce with men, sometimes “bring forth such moles.” *Levret*^x testifies from his own observations, that such moles are generated about that period of life when the monthly evacuations cease; in the young, very rarely. Others testify the same thing^y.

When the strange corruption of the womb or the adjacent parts, has produced large tumours, these are improperly called moles. Thus *Lamzweerde*^z found in the body of an old maid, whose abdomen had been swelled during upwards of twenty years, the whole womb become schirrous and cartilaginous, scarcely yielding to the knife, and weighing eighteen pounds: in the corps of a girl of eleven years of age, he found a tumour of fifteen pound weight, which hung by a small stem from the testicle. Both these tumours he considered as moles. In the same manner, *Paræus* determined that a schirrous and hard womb, which being taken out of the body, weighed upwards of nine pound: *In initio molam fuisse, quæ temporis successu in schirrhosum corpus, una cum uteri propria substantia, degenerasset*: “Had been at first
“a mole,

^u Observat. anatomic. chirurg. No. 58. pag. 54. ^x L'Art des accouch. pag. 187. ^y Brudenell Exton, sect. 8. pag. 127.

^z Histor. natur. molar. uteri. cap. 2. pag. 14, 15.

“ a mole, which with the substance of the womb,
 “ had in process of time, degenerated into a schirrous
 “ body^a. Nay in *Moschion*^b, where he treats of the
 mole, we read as follows: *Duritia matricis est, quæ
 ex præcedente fervore fit, per quam venter totus extensus
 est ita, ut videatur gravida. Quandoque aliquid etiam
 in matrice generatur, copiosior caro augetur, & immisso
 digito, obstetrix in orificio, vel collo, invenit illud ip-
 sum. Quandoque tota matrix talem morbum patitur,
 ita ut totus venter lapidea duritie increseat, & reliquum
 corpus cum malo colore & fastidio detineatur*: “ It is
 “ the hardness of the matrix, occasioned by the pre-
 “ ceding heat, by which the whole body is so ex-
 “ tended, as to give room to an opinion of preg-
 “ nancy. And when any thing is generated in the
 “ matrix, the flesh is increased in bulk, and the
 “ midwife having put her finger in the orifice or the
 “ neck of the womb, finds the excrescence. And
 “ sometimes the whole womb is affected with this
 “ disorder to such a degree, that the belly becomes
 “ hard all over like a stone, and the rest of the body
 “ is of a bad colour, and a general nauseating is
 “ felt.”

It is evident from these observations, that several different disorders of the body, have been described by authors under the name of the mola. It at the same time appears from what has been just said, what we should think of the mola.

S E C T. MCCCXXVII.

IF from the passions of the mind, blood too fluid or too much agitated, recourse should be had to the preparations of barley, gellies, emulsions, opiates and astringents.

N 3

If

^a Spach. gynæc pag. 424.
 gynæc. part. prior. cap. 7. pag. 7.

^b Ibid. pag. 16. & harmon.

If the strong passions of the mind may dissolve the connexion of the placenta with the womb, and occasion a dangerous hæmorrhage, how much more is this to be feared, whilst after delivery the vessels are still open, or are so little contracted, that the slightest cause is capable of dilating them again. See what has been said upon this subject in sect. 1306. All emotions of the mind are therefore carefully to be guarded against; women with child should be restrained from any way concerning themselves with domestic affairs, they should not hear either of good or bad news, and the composed tranquillity of their serene minds, should upon no account be disturbed. It was by a prudent law provided at *Harlem* (a town in *Holland*) that nothing should be done at the time of a delivery, which might interrupt the necessary repose of the lying-in woman. A mark is put upon the door of a house in which a woman lies in, which being seen, no serjeant, beadle, or any other officer of justice, is allowed to enter that house. Such care the commonwealth has thought proper to take of that woman who gives a citizen to her country. The worthiest citizens, accustomed from their tender years to respect fruitful matrons, carefully keep every sort of noise from the neighbourhood. This must be acknowledged to be a noble example, and well worthy of imitation.

From blood too fluid, or too much agitated, &c. It is obvious what medicines are to be used upon this occasion; all those that correct humours too thin, and all those that check too rapid a motion, should then be applied. But we should here chiefly attend to those that are capable of effecting a contraction of the womb, and thus stopping up the gaping vessels; and as a syncope, and even sudden death is to be apprehended in this case, a quick remedy is required. It was before observed, that the greatest masters of the art of midwifery were against separating the placenta from the womb, before it begins to contract itself,

self, least a dangerous hæmorrhage should be the consequence. They could easily form a judgment of this by touching the abdomen of the lying-in woman. *Dusse*^c, a skilful man-midwife, has shewn a method, by which a too great evacuation of the womb after delivery, may be diminished: he applied both hands to the outermost part of the abdomen of the lying-in woman, and gently pressed the womb, at the same time moving his hands over the whole outermost part of the womb, now in a circular manner, now from the right to the left, sometimes from the lower part upwards, and sometimes in the contrary direction; thus he in every direction, endeavoured gently to press and to move the flaccid womb, that it might contract itself the more. Thus there came from it clotted lumps of blood, which if they were of a large size, so as to fill the womb in such a manner as to make it resist that soft pressure too much, should be first taken out by the hand; which subject has been treated of already.

That ornament of the learned world, *Fonténelle*, has with his usual elegance, added, that but one fault can be found with this method, namely, that at the same time that it is perfectly simple, it is entirely free from every thing mysterious. *Mauriceau*^d has observed, that too great evacuations after delivery, are sometimes occasioned by the thick excrements accumulated in the great intestines at the time of pregnancy. He was called to the assistance of a lying-in woman, from whom the placenta had been taken in a rough manner, which had occasioned a violent hæmorrhage that lasted during five or six days. Although a few emollient clysters had been applied, no excrements came out; the clysters alone came out at the anus: contrary to the opinion of many who were present, he ordered a clyster somewhat stronger to be given the patient, and this had such an effect, that it

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filled

^c Académ. des sciences Pan. 1724. hist. pag. 51.
des malad. des femm. gross. liv. 3. chap. 5. pag. 386, &c.

^d Traite

filled the whole pelvis with hard excrements, upon which the swelling of the abdomen, that was before puffed up and affected with pain, immediately subsided, and the hæmorrhage ceased. He testifies likewise, that he afterwards had recourse to the same method with success, in order to diminish the too great evacuations after delivery; that is, if there was any room for a suspicion that a quantity of hard excrements remained in the great intestines.

If after this, the evacuations after delivery still continued, he ordered the ticken to be taken away, and caused the lying-in woman to be placed upon straw covered with sheets only; to her loins he applied a cold mixture of vinegar and water; in winter, however, he ordered that it should be lukewarm; he gave her purslain to drink, and bound her loins with fresh knot-grass; which is called also *Centumnodia*. He at the same time sparingly administered broths and gellies; and so just preserved life that the vessels might have time to contract. For drink he gave her a little red wine mixed with chalybeate water. Sydenham * recommends food somewhat nourishing, and twice or three times a day, six ounces of a drink made of an equal portion of red wine and plaintain water boiled to three ounces, and then sweetened with sugar. Thus much of the fragrant, spirituous part of wine was evaporated, and there remained the rough astringent which is in red wine. I found good effects from diluting half an ounce of the tincture of cinnamon in six ounces of distilled balm-water or the like, and giving a spoonful of such a mixture every two hours. Such a remedy cheers and strengthens, and yet does not hurt, by increasing the motion of the blood; the distilled water of cinnamon, and its oil, have a fragrant, aromatic, stimulating quality; but that rough, strengthening

* Dissertat. epistol. pag. 537.

ening quality, together with the fragrance of the cinnamon, is to be found in the tincture; which seems therefore to deserve the preference.

But with regard to the efficacy of opiates and astringents in excessive evacuations of the lochia after delivery. See what has been said in sect. 1307.

S E C T. MCCCXXVIII.

THE choice of which we are taught by the symptoms of the disease, of the constitution, of the urgency of the complaint.

Thus if a too great evacuation after delivery, occasioned by the lumps of clotted blood retained in the womb, should continue, these are to be taken out with caution, as has been said; if this should be occasioned by a flaccid and feeble constitution, recourse should be had to strengthening cordials.

But if a great hæmorrhage should be occasioned by the womb's not contracting itself, the worst consequences are to be quickly dreaded; and for that reason the most efficacious remedies should be immediately applied; all these have been already treated of. We are now carefully to consider those ill consequences which generally follow the retention of the lochia which should be evacuated after delivery.

S E C T. MCCCXXIX.

WHILST there flows from the contracted vessels of the womb into the breasts, a serous milky food, there arises a slight fever, after which the lochia which should be evacuated are entirely retained; whence many most unpromising symptoms take rise; according as they are carried into one or other of the viscera; hence

hence proceed phrenzies, plenresies, inflammations of the lungs, quinsies, madness attended with a fever, inflammation of the midriff and difficulty of breathing, inflammations of the breasts, a worse inflammation of the liver, the stomach, the cawle, of the double membrane of the *Peritonæum*, the spleen, the kidneys, the intestines, likewise the bloody flux, the cholick, the iliac passion, apoplexy, palsy and many disorders.

It was before determined in sect. 1325, where too great evacuation after delivery was treated of, that the quantity of the lochia greatly varies, and cannot with exactness be ascertained; the same holds with regard to the time that these evacuations last. But as such and so great evils are to be apprehended from their suppression, it is worth while to consider those things which in the course of nature happen in child-bed.

As soon as the placenta is separated from the womb, a considerable quantity of pure, unmixed blood runs out, and the vessels being emptied of the blood which distended them, contract themselves; whence the hæmorrhage is quickly diminished, so that a few hours after delivery, the redness of the lochia already begins to be lessened, and the red colour entirely disappears on the third, fourth, or even on the fifth day, (see sect. 1325) particular notice should be taken of this, because I have sometimes known physicians dread the worst consequences at not seeing the sheets stained with red at the time of delivery; from whence they inferred that a suppression of the evacuations after delivery was at hand, and they had recourse to all the efforts of art to renew them. But this dimution of the evacuations is natural, the vessels of the womb being contracted more and more. But as *Hippocrates* (see sect. 1325) has fixed a sufficient

cient time for the evacuations after delivery, and others have thought, *emortuas menstruorum reliquias*: “That the dead leavings of the menses,” being collected during the whole time of pregnancy, were in that manner poured out, thence arose so many complaints of the suppression of these evacuations. But bloody evacuations return soon after of their own accord, as has been likewise observed in sect. 1325.

There seems therefore to be no reason to apprehend any danger, so as there are no other bad symptoms (of which hereafter) even if the evacuations should be at this time less frequent and not red. But that they should cease entirely, so that linen cloths applied to the privy parts for some hours together, should continue dry; this is certainly a very bad symptom. For in the common course of nature, that which flows from the womb has the resemblance of good *Pus*^f, as well in colour as in thickness, and an insipid disagreeable smell. If all things turn out happily, such evacuations continue as it were purulent to the end of delivery, in such a manner however, that the quantity is every day diminished.

It was before observed in sect. 1304, where the dangerous hæmorrhage of the womb in women with child was treated of, that the surface of the chorion is every where connected to the cavity of the womb by a porous substance through which the vessels pass from the womb to the chorion. *Cavum enim uteri universum vasa exhibebat plurima, impleta, ore aperto biantia, cum reliquiis cellulosa illius substantia, quæ ovum ligaverat; hæc potissimum cernebantur eo in loco, cui placenta adhæserat; eratque locus ille tota fere posterior pars uteri, quæ in situ dorsum spectat, amplius igitur & vix minor, quam tertia pars circumferentia uteri. Superficies uteri interna, qua placentam sustinuerat, inæquabilissima apparebat, & leviter turgida adsurgebat, &c.* “For the whole cavity of the womb displayed
“several vessels, filled, gaping with open mouths,
“with

“ with the remains of that porous substance which
 “ bound the egg; these were chiefly perceived in
 “ that place to which the placenta had stuck; and
 “ that place was almost the whole lower part of the
 “ womb, which in its situation looks towards the
 “ back, being large and scarce less than the third
 “ part of the circumference of the womb. The in-
 “ ternal surface of the womb, where it supported
 “ the placenta, appeared very uneven and rose with
 “ a gentle swelling, &c. s” When therefore the
 surface of the womb after the most natural delivery,
 has the remains of that torn, porous tunic, and the
 broken extremities of the vessels which pass from the
 womb to the chorion, especially in the place to
 which the placenta stuck; it seems proper that the
 whole hollow surface of the womb should be cleansed
 of these, that it may return to its former state. But
 as this porous substance and the vessels, though they
 are of considerable size, are very tender; a gentle,
 and as it were superficial suppuration suffices, that
 these parts torn, and as it were, half dead, may be
 separated from what are sound and well, and the
 stuffed vessels may in the place to which the placenta
 stuck, be freed from the obstructing humour; so that
 thus from all these dissolved together, may be pro-
 duced a liquor resembling Pus, which comes from
 the womb in the form of the things evacuated after
 delivery; concerning these, see what has been said in
 section 387.

But there cannot be made a separation of the cho-
 rion and the placenta from the womb, without the
 breaking of several vessels; whence there proceeds,
Soluta cohesio, recens, cruenta, partis mollis: “ Or
 “ fresh and bloody solution of cohesion in a soft
 “ part;” that is, a wound. See sect. 145. It is
 true indeed, that it is said in the definition of a
 wound, that such solution of cohesion is made, *A*
corpore duro, acuto, moto, presso vel resistente; “ By
 “ a hard,

“ a hard, sharp body, moved, pressed or resisting :” This is added chiefly to distinguish it from a contusion ; but it is obvious that the nature of a wound is not changed, whilst the cohesion of the vessels is taken away by pulling away the chorion, or by a separation ever so gentle, by which however the cohesion of the vessels is dissolved.

If therefore the phænomena of a wound enumerated in sect. 158, are compared with what happens to women with child, all circumstances will be found exactly to agree ; that is, as far as the condition of the place affected, and the cause of dissolved cohesion permit, and as far as a discovery can be made by the senses. For the blood at first runs out with violence, soon after the flowing diminishes of its own accord, and at last is stopped ; there grows upon an external wound when left to itself, a crust of blood, which has no place here, as the internal surface of the womb is wet, and the free approach of the air is guarded against ; the womb being contracted, especially it's orifice, warm linen cloths should be applied to the pudendum, least the coldness of the air should prove hurtful. But a few hours after delivery, a diluted, red and subtile liquor flows out. Just as in a wound which lies open to the senses, the lips of the wound swell, are warm, feel pain, &c. (see sect. 158, No. 5) something of the like nature seems to be affected in the womb, but in a slighter manner, because the injury is here superficial but in a broad surface ; we cannot indeed distinguish these things with our eyes ; but it seems that it may be deduced from hence, that as in a wound, so when a woman is in labour, a slight fever comes on precisely at that time, and also on the third or fourth day, sooner or later, there is produced something of a purulent nature, nay sometimes true, genuine pus, with all its properties, which being mixed with filth, and with the humour which transpires from the surface of the womb and the vagina, is sometimes somewhat different from
good

good pus, though it is produced by the same cause. But when the pus appears in the wound, then the redness, warmth, pain, swelling, slight fever, &c. cease or are diminished. The same change is observed in women who lie in. We meet with an admirable account of this change in the evacuations after delivery in *Moschion*^h: *Primo sanguis* (the editor would have added *purus & multus*) *secundo fœculenti & paucus*, *ultimo purulentus*: "At first there is blood voided," (the editor would have added, "pure" and in a great quantity) then it becomes feculent and scanty, and at last purulent."

It hence appears to be very probable, that that fever in lying-in women, which is called the milk fever, does not spring solely from the milk brought into the breasts, but also from the purifying of the womb, by that gentle and superficial suppuration. But as even the best pus when retained too long, becomes acrid and putrifies (see sect. 406.) the same thing will hold with regard to the purulent evacuations after delivery, if they should be kept back. It at the same time appears, that such a purulent evacuation is not to be feared as it is natural, which deserves to be attended to, as I have known not only the lying-in woman and the standers-by, but even physicians alarmed thereby, and in fear that the womb was threatened by a dangerous ulcer: their fear was increased if a sort of a smell of putrefaction affected their noses, either on account on the linen rags not being often enough changed, or whilst some of the clotted blood too long retained in the hollow parts of the womb, and melting into rottenish corruption came out. Sometimes there is clotted blood in the cavity of the womb, often in the very sinusses, made in the substance of the womb, which have been spoken of already, there remains some blood which afterwards gives a bad smell to the lochia I have often

^h Spach. gynæc. pag. 5. No. 56. & harmon. gynæc. part. prior cap. 17. pag. 14.

had an opportunity of seeing what *Levret*ⁱ has judiciously remarked upon, that the lochia had a bad smell, and that there appeared spots upon the linen rags which were surrounded with a livid border, which remained till the clotted blood came out, or if it was inconsiderable, melting in the holes of the womb was forced out along with the purulent matter, which being over, the stink ceased, and the usual smell, rather a disagreeable one, came from the linen. Hence we may guess the reason why they stink upon one day and not upon another; according as the linen rags are more frequently or more seldom changed, or any clotted blood lies hid in them.

But if that purulent matter does not come out, but being sucked back, should be mixed with the humours, it may, being brought to the viscera by a bad metastasis of the morbid matter, give occasion to dangerous disorders. *Hippocrates*^k has pointed out this danger: *Quibus ex partu prodeunt alba, his vero suppressis, cum febre surditas & dolor acutus ad latus, fit, mente moventur & perniciose habent*: “Those whose
“ evacuations are white, when they are suppressed,
“ are seized with a fever, a deafness, an acute pain
“ in the sides, are troubled in mind, and find them-
“ selves very ill.” The same prognosticated symptoms are assigned in another place^l; and *Galen*^m, in his commentary upon this text, says, *Quum igitur hic sanguis vacuatus non fuerit a mulieris puerperio, aut uterum ipsum in phlegmonem attollit magnam, aut, ad superiorem aliquam sedem vectus, parti excipienti proprium affectum, periculumque, affert; ad quam autem pervenerit, mox apparentia symptomata indicabunt, quomodo et nunc, tum thorax tum caput, vitiosum sanguinem, ab utero sursum delatum, exceperint*: “When
“ therefore this blood is not evacuated during the
“ woman’s lying-in, it either raises the womb itself
“ with

ⁱ L’Art des accouchm. pag. 140.
No. 525. charter. Tom. VIII. pag. 883.
lib. 1. textu 82. ibid. pag. 752.

^k Coacar. prænot.

^l Hippoc. prædict.

^m Ibid. 752.

“ with a great hot swelling, or being carried to any
 “ higher seat, it communicates its own property and
 “ its own danger, to the part which receives it ;
 “ but which part it comes to, the symptoms which
 “ appear outwardly will indicate, as now the thorax
 “ and now the head receive the vitiated blood
 “ brought upwards from the womb.”

It seems therefore that *Hippocrates* observed those white evacuations, and apprehended a dangerous change from their retention. But another text teaches us, that he looked upon them as purulent, and thought the womb ulcerated. These are his words * : *Si ulcerati quidem uteri fuerint, neque puerperii purgamentæ, ut decet, adfuerint, omnibus partibus dolebit, & nisi magna ulcera adfuerint, curata brevi, sanitatem recipit* : “ If the wombs are ulcerated, and
 “ the evacuations after delivery do not come on as
 “ they should do, she will feel pain in all her parts ;
 “ and if she is not troubled with great ulcers, she
 “ will soon be cured and recover her health.” He therefore admitted that slight and superficial suppuration of the womb, and the recovery that shortly after follows from thence, the womb being in that manner cleansed ; he has distinguished it from the greater ulcer which follows a violent inflammation of the womb, and has its place not in its hollow surface, but in its substance. This is confirmed by what follows soon after † : *Quod si uteri inflammati non fuerint, sua sponte exit malum ; graveolens & lividum aut nigrum & grumosum, existit & mulier a lochiis purgatur* : “ But
 “ if the wombs are not inflamed, the mass which
 “ hurts them, comes out of its own accord ; stink-
 “ ing and livid, or black and clotted, and the wo-
 “ man’s evacuations are over.” This perfectly agrees with what has been said already.

It has been frequently observed before in treating of the diseases of virgins and pregnant women, that there is a manifest connexion between the womb and the

* De mulier. morb. lib. 1. cap. 13. charter. Tom. VII. p. 753.

† Ibid. pag. 754.

the breasts, and for this reason it is generally made a maxim, that when the vessels of the womb are bound close, the ferous milky food flows into the breast. But it is thought that this milky serum is carried to the womb at the time of pregnancy, as nourishment to the fœtus. Whilst Noortwyck ⁿ with caution separated the chorion from the womb, he found, *Uno in loco exiguum quid liquoris crassiusculi, albicantis, supra chorion effusum quod cremorem lactis non inepte reserebat*: “ In one place a little thickish white liquor “ poured out upon the chorion, which appeared to “ be somewhat like cocam.” But though he in another place ^o, gives us to understand, that he never met with an author who asserted that he had seen such a flowing in any person; he thinks this opinion by no means to be treated with contempt. The most accurate Winsl ^w testifies, that when pregnancy was far advanced, the lacteal ducts were formed in the womb ^p. The celebrated Astruc ^q confirms this, and says that he sees it with his eyes, if the womb of a woman who died in the last month of her pregnancy, or at the time of delivery, was inverted, and the whole internal surface to which the placenta does not stick, was pressed, after being first cleansed; then a great quantity of drops of lacteal liquor oozes through the smallest pores, which pores are the extremities of the vessels which separate this lacteal juice from the blood. But if such a womb should for awhile be steeped in vinegar, and the internal tunic should afterwards be separated by the right hand, numberless vessels appear to the sight small, vermicular, white, exceeding a hog’s bristle in thickness, three, four, or five lines in length, full of a lacteal liquor, which flows from these vessels when hurt. From all this we may at least conclude, *Aliquid forte lacti simile secundum naturæ leges intra ovum deduci sed*

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*directum*ⁿ Uter. human. gravid histor. pag 10.^o Ibid. pag. 95.^p Exposit. anatom. traite du bas ventre, No. 623. pag. 578.^q Traite des malad. de femmes. Tom. I. pag. 12.

directum arteriarum uteri notabilium cum ovi vasis communium nequaquam probabilem reddere sententiam, quæ statueret, nil nisi lacteum humorem eo ingredi, cum per minora longe vasa, sanguis liberrime fluat: “ That “ perhaps something of a nature similar to that of “ milk, may according to the laws of nature be “ brought into the egg, but that the direct communication of the more remarkable arteries of the “ womb, with the vessels of the egg, renders that “ opinion very improbable, which supposes that nothing but lacteal humours enters there, as the blood “ flows with perfect freedom through much more “ diminutive vessels.” The reader may likewise consult what *Robault* ^s has said, in order to prove that not only the chyle, but the blood, and likewise the milk, comes from the mother to the fœtus. For he admirably remarks, that according to this opinion, the lacteal juice alone should run out, whilst the placenta is separated from the womb, which is repugnant to all observations.

The first rude beginning of a man being extremely tender, stands in need of much liquid, that it may be nourished and grow; but when the embryo is much increased in bulk, it seems to have occasion for more substantial food. When the time of pregnancy is near expiring, it should be used to more solid food; it seems to be for this reason that the milk is prepared in some of the vessels of the womb, and perhaps in greater plenty when the time of delivery is near at hand. *Hippocrates* ^t has made the following observations: *Pingui nempe incalescente & candido effectu quod uteri calore edulcatum est, in mamma expressum tendit & in utero quoque exigua partis per eadem venas defertur; ad mammas enim et uteros ejusmodi venulæ & consimiles aliæ ferentur. Quumque ad uteros pervenit, lactis formam habet, eoque exiguo puer fruitur*

^v Noortwyck de utero gravido, pag. 11.
 scienc. Par. 1714. mem. pag. 180. & seq.
 pueri, cap. 7. charter. Tom. V. pag. 318.

^s Academ. d.
^t De natur.

fruitur: “ The fat growing warm and becoming
 “ white, what it sweetened by the warmth of the
 “ womb, is strained into the breasts, and a small
 “ portion of it is carried into the womb by the same
 “ veins; for such veins and other like them proceed
 “ to the breasts and the womb. When it comes to
 “ the womb it has the form of milk, and the foetus
 “ receives the benefit of some of it.” Then in another
 “ place ^u, when he inquires into the causes which
 make the foetus try to get out of its mother’s womb,
 he says, *Quod enim in sanguine dulcissimum est, ad sese
 attrahit, simulque aliquantula lactis portione fruitur.
 Quæ quoniam ipsi pauciora sint, puerque jam plenior factus
 plus alimenti quam adsit requirit, ipse sese jactans, mem-
 branas disrumpens, initium partus matri inaudit*:
 “ What is sweetest in the blood it attracts to itself,
 “ and at the same time feeds upon a small portion of
 “ milk. When these begin to grow scanty, and the
 “ child being increased in size, requires more nou-
 “ rishment than there is for it, agitating itself, and
 “ breaking the membranes, the child itself first
 “ urges its mother to delivery.” But as nature in-
 tended the mother’s milk for the child’s food after
 delivery, it seems probable that the foetus being
 grown in the mother’s womb, receives a certain
 quantity of milk, that it may accustom itself to this
 food by degrees. In the mean time, whilst pregnancy
 lasts, the breasts are disposed in such a manner, that
 they begin to separate the milk from the blood;
 whence, in many women with child, a certain quan-
 tity of milk, usually comes drop by drop from the
 breasts, especially towards the last months of preg-
 nancy; for then if delivery was to come on, the
 child might live if it was born in the seventh month,
 or not so soon as has been said already. So that the
 dropping of milk from the breasts, indicates that an
 easy separation of the milk then takes place of part,
 of which the foetus reaps the benefit in its mother’s
 O 2 womb,

womb, which if it was entirely deprived of, it would become weaker as wanting more substantial food. *Hippocrates* * informs us of this in the following terms: *Mulieri utero gerenti, si lac copiosum eam mammis effluat, fœtum imbecillum significat. Quod si solidæ mammæ fuerint, valentiorẽ fœtum indicant.* “ If milk should flow copiously from the breasts of a woman with child, it is a sign that the fœtus is weak. If the breasts are firm, it is a proof that the child is robust.” But whilst the infant just born is separated from all connection with the mother’s womb, there is similar nourishment ready for it in the breasts, that is milk, of which greater plenty is now required than when it clung to the womb; because it should now be nourished and grow by this alone, as it no longer receives any thing from the mother by the umbilical vessels. Wherefore at that time, the vessels of the womb being closed after delivery, that ferous, lacteal food flows to the breasts.

For the vessels of the womb are less pressed whilst the breasts swell; and hence as it was said upon another occasion in treating of the menses *Hippocrates* † advised: *Si mulieri menstrua velis sistere, cucurbitulam quam maximam mammis admove.* “ If you would stop a woman’s monthly evacuations, apply a cupping glass of the largest size to her breasts.” On the other hand, he has elsewhere given us to understand ‡ *Si mulier quæ neque gravida est, neque peperit, lac habet, huic menstrua defecerunt.* “ If a woman who is neither pregnant, nor has brought forth, should have milk, her monthly evacuations have ceased.” For the vessels of the womb making too great resistance, the breasts are so swelled and filled, that the separation and secretion of the milk would follow.

But whilst that ferous lacteal food, not being able to make its way through the vessels of the womb now closed

* Aphor. 52. sect. 5. charter. Tom. IX. pag. 225.

† Ibid. aphor. 50. sect. 3. charter. Tom. IX. pag. 224.

‡ Ibid. aphor. 39. pag. 219.

closed up, is carried to the breasts, there arise certain disturbances in the whole body, and there occur new symptoms worthy of consideration. There is generally a slight fever at the same time, which is by physicians called the milk fever.

In an hour or two after delivery, tranquillity is restored in all parts of the body; the pulse which was high and extremely quick in the last efforts of delivery, soon returns to its natural state; and if the woman just delivered should sleep for a few hours, she finds herself alert, freed from her burthen, and scarcely complains of any thing, except of pains in her limbs, occasioned by the efforts she has made; and sometimes of a considerable swelling in the pudendum, a disorder which is easily cured by the application of softening fomentations. But upon the second, oftener upon the third, and sometimes upon the fourth day, her sleep becomes disturbed, attended with troublesome dreams, and sometimes she lies awake the whole night: she is seized with inquietude, and sometimes with a head-ach; the pulse rises and becomes more quick; a tremor seizes her all along her back bone, between the shoulder-blades and sometimes all over the body; there follows an increase of heat; the breasts begin to feel pain, to stretch and to swell; breathing becomes more difficult, the evacuations are diminished, and at the same time the arms move with greater difficulty, on account of the extension of the adjacent parts. If in these circumstances, lying-in women have repose, use a copious diluting and pleasant drink and sparing food; in four and twenty hours all these discomposures are calmed by an equal and sufficiently copious sweating all over the body, especially about the chest, and the breasts swell with milk. In some women of an excellent constitution, this fever is found to be so slight, that besides passing the night a little uneasily, it is scarce of any signification, especially if they give their children suck; this I observed both in my own

wife, and in many other women. It was customary with me in twelve hours after delivery, to bring their new-born children to their breasts, when I thought that thin and serous milk which first comes from the breasts, was highly beneficial to them, which subject shall be treated of in the next chapter. The suction itself causes the milk to be more easily carried to the breasts, and the milk's being drawn from them, prevents them from being too much swelled. But when the breasts swelled on a sudden, and could not be emptied by a weak child being too turgid, I advised that another woman should in part evacuate them by a gentle suction, and then that the child should be brought to them. It is evident that in those who decline giving suck to their own children, there occurs *cæteris paribus*, a greater difficulty. For the milk already gathered in the breasts, should return again into the blood; and before this can happen, it sometimes stays a long time in the little lacteal tubes of the breasts, and many disorders follow, which shall be treated of hereafter. Whilst this was done, the swelling of the breasts again subsides, and the quantity of the evacuations are increased, which as they now grow white at this time of delivery, the milk being driven back, is said to be evacuated with them; but as was said before, they come purulent from the womb, whilst its hollow surface is cleansed.

Authors have remarked, that the milk gathered in the breasts, being driven back into the blood. afterwards comes out by various ways: it was thought the most natural way of all, if it came out through the vessels of the womb in the form of a secundine: it has often been observed to come out with the urine, with the excrements in like manner; sometimes likewise by sweating; yet I doubt whether sweats truly lacteal, have been observed in women who have brought forth. It is acknowledged however, that milk sometimes disappears without any sensible

sensible evacuation of it being observed^b. Nor will this seem surprising, if we consider that milk is a healthy humour, that is, chyle mixed with other humours, and with these conducted through the vessels and the viscera, that it may after a few hours acquire the nature of our humours, and be thoroughly assimilated to them by the reiterated action of our vessels and viscera. We all live by our own milk; but it is not always separated from the blood, and collected in the breasts; but in women with child, and lying-in women alone, this happens naturally. For the milk flows with the blood a few hours after they have eat, and if they are bled at this time, the milk is generally found mixed with the serum of the blood. We are therefore the less surpris'd, that by strong and reiterated suction, milk has sometimes come from pure virgins; and even from men when they have given their breasts to famished and froward children. Many such cases are related in medical history. If therefore the milk has not degenerated by making a long stay in the breasts, or if its nature has not been changed by a violent fever, it will not disturb any of the body's functions whilst it is again mixed with the blood. But if the milk should begin any way to degenerate from the healthy humours, the vitious part may be easily thrown off by urine or other excretions. *Leuret*^c observed, that whilst the milk fever is diminished, there generally follows a sweat which gives rise to a troublesome sense of pricking in the skin, though the quantity of the secundines be generally at the same time increased. But the belly which was before somewhat bound, becomes more relaxed, or at least is easily evacuated with the slightest stimulating: if the sweating should be discontinued, then urine somewhat troubled, flows out plentifully; but if the sweats continue, the urine becomes of a higher colour, and comes out but sparingly, and its nature

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always

^b Ibid pag. 215.^c L'Art des accouchm. pag 135.

always corresponds with that of the liquors used by the lying-in women.

But by the laws of nature, such things as would injure the health if they staid over long in the body, come out of it by stool or urine, or through the surface of the skin. From all these particulars it is easy to deduce the reason why the milk sometimes returns into the blood without doing any hurt to speak of.

But something else obtains in women with child, which deserves our attentive consideration. It is well known that in some disorders, the milk separates from the blood with great ease, and comes out of the body with great hurt to it. Thus in the diabetes, the urine is sometimes observed to be milky, which if it should be copious, or should be long excerned in that manner, it deprives the body of nutrition; and a person thus disordered, dies of a consuming fever. Such a chylous looseness has likewise been observed this easy separation of the milk from the blood is a disease.

This easy separation of the milk from the blood, seems to be established by a natural law, that it may serve as food for the new-born child. I do not here speak of the causes from whence this may take its rise; it is enough for the physician to know what happens in the body, though he does not always perfectly understand the reason of the phænomenon. We ought always be mindful of the wholesome advice of Celsus^d: *Rationalem quidem puto medecinam esse debere: instrui vero ab evidentibus causis; obscuris omnibus non a cogitatione artificis, sed ab arte ipsa, rejectis*:
 “ I am of opinion that physick should be rational:
 “ that it should proceed upon evident causes; all
 “ obscure causes being excluded, not indeed entirely from the artist’s thoughts, but from
 “ the art itself.” When therefore sure observations teach us, than an easy separation of the milk from the blood, which began at the latter end of the time of pregnancy is approaching; and it is likewise
 known,

^d In fine præfat. pag. 20.

known, that by the laws of nature, the milk separated from the blood is gathered into the breasts, it is evident, that if the flowing of the milk into the breasts is hindered, or if being gathered there, it is not brought out by the breasts, something bad is to be feared, either in the breasts themselves, or even in the rest of the body, if the milk secreted from the blood should be left at improper places.

Levret ^e justly apprehended fatal consequences, if, the evacuations after delivery being scanty, the breasts should not swell at the usual time; especially if there should appear the slightest symptoms of an approaching delirium, or if they should begin to speak indistinctly. Some are seized with a violent head-ach, and that so suddenly, that they think themselves struck by something external; there follows a tingling of the ears, a deep sleep, a snoring, involuntary laughter, an agitation of the tendons, strong convulsions and sudden death. After death, milky matter has been often found in the skull. He has likewise seen acute disorders of the breast in women who had been delivered ^f, which he with good reason, attributed to the same cause; for he had seen the breasts flaccid, when these disorders were coming on; but when, by good luck, the breasts swelled again, a cure quickly followed. But such a change of the place of the milk is sometimes effected in the pelvis ^g: but this seldom happens before the twelfth or fifteenth day after delivery, if there be a milk fever in the case, and the breasts should swell. But this easy separation of the milk from the blood lasts a long time in women who give their own children suck, Such a removal of the milk to the pelvis, has happened to a woman a year after delivery; but a fortnight before she lost the child, to whom she, till then, gave suck. He observed, however, that such a change is generally effected in fifteen days after the breasts have

^e L'Art des accouch. pag. 146, 147.
^g Ibid. pag. 150, & seq.

^f Ibid. pag. 149.

have begun to grow flaccid; and that even in women who have not given suck, but whose milk has come drop by drop through the breasts. This has been confirmed by many observations, and such a change never happened much sooner, except in those in whom the milk had not been carried to the breasts, but rather tended immediately to other places. That milky matter is then usually gathered in the porous tunic, by which the peritonæum is joined to the pelvis, or between the muscle psoa and the iliac muscle about the broad ligaments, and sometimes in many places at a time. Whilst this comes to pass, there is felt a dead pain about the groin, a weight in the pelvis, and a weakness of the thighs. If she lies down upon her back with her thighs distended, she feels more uneasiness than if they were bent. These symptoms but rarely appear on both sides at a time; but whilst the patient endeavours to divert them on one side, similar symptoms follow on the other side. This milky matter afterwards proceeds to the thigh, and distends the porous tunic; at last the same symptoms are observed in the leg and foot, and thus all these parts swell, and the pains which had before been felt about the pelvis, are allayed. When such a swelling begins to subside, the swelling first ceases in the thighs, then in the legs and feet in like manner as has been said in treating of the universal dropsy of the whole body called anasarca. I have sometimes seen such swellings at the time of delivery; whilst they are pressed with the fingers, the holes are not observed as in the anasarca; but the tumour resists more, and they are generally happily removed in ten or twelve days by milk fomentations, and a decoction of Venetian soap; especially if there comes out copiously thick urine, at first troubled; on the succeeding days laying aside much of its sediment.

But such a secretion of the milky matter is sometimes made in other parts of the body not to be dissipated

pated any more. Thus that excellent physician *Chomel*^b, observed in a woman who had lain in for the first time, that the belly had swelled in such a manner, that three weeks after delivery, it was almost as big as at the latter end of pregnancy. The navel having broke of its own accord, a large quantity of milky and serous matter, but of a very bad smell and a greyish colour, came out: two months after the breaking of the navel, the patient with proper care recovered, being perfectly cured. The celebrated physician above-mentioned, was of opinion that this change happened within the folds of the peritonæum. He at the same time remarks, that he had in two women who had been delivered, observed the thighs to have been very much swelled; these swellings he ascribes to the suppression of the evacuations after delivery, and acknowledges that he could not without difficulty, dispel them; such tumours however, seem rather to proceed from the milk's changing its place. Did *Ruisch*ⁱ observe something of this nature gathered in the abdomen? He had visited a lying-in woman who was in a high fever, and who complained of a violent pain in the outermost part of the abdomen, together with a stretching and a hardness: *In cadaveris abdomine inveni mul um materię fœtidę, loturę carnis, aut lochiorum corruptorum, ad exemplum; qualis etiam a me reperta est in uteri cavitate*: “ in the abdomen of the body, he found “ much foetid matter, something resembling the “ washings of flesh or putrefied lochia; such as “ has been found by me in the cavity of the womb.” But he was of opinion that that fluid which floated in the pelvis, passed from the womb into the abdomen, by the Fallopian tubes.

Practical observations of the most able physicians, shew, that that change of the milk's place, affects several

^b Acad. de scienc. l'an. 1728. mem. pag. 581. & seq.

ⁱ Observat. anatom. chirurg. No. 84. pag. 79.

several different viscera^k. In the winter of the year 1746, an epidemical disease was observed in women with child. Humours, whilst they were in labour, run from them, and afterwards the womb which was dry, hard, and full of pain, swelled; nor were the evacuations made in the usual manner. The disorder began with a looseness, a pain in the belly followed, especially in that part which is occupied by the broad ligaments of the womb, the abdomen was stretched, there was a pain in the heart and sometimes a cough. Upon the third or fourth day after delivery, the breasts which generally swell at that time, grew flaccid, and on the third or seventh day, the women died. This disease attacked the poor alone; especially if they had been delivered in an hospital. In the month of February, the disease was so dangerous, that scarcely one escaped out of twenty. In the corpses there was found a coagulation of the milk sticking to the external surface of the intestines, and milky serum poured out in the hollow of the abdomen; a serum of the like nature was found in some in the cavity of the breast, and whilst their lungs were cut, they threw up a sort of milky, but putrid lymph. The ventricle, the intestines, and the womb, being properly examined, seemed to have suffered inflammation, and lumps of clotted blood came from the dissected canals of the womb: and in many there seemed to have been a suppuration of the ovaria or woman's testicles.

May it not be concluded from what has been already said, that a change of the milk's place may produce all the disorders enumerated in the text, which are usually attributed to the suppression of the evacuations after delivery: according as the milky matter is thrown into these parts or those, and indeed with the greatest danger, the more the parts into which it is thrown are necessary to life, as also if this
matter

^k Acad. de scienc. l'an. 1746, in 4to. mem. pag. 160.

matter be thrown into such places, from whence it will be with difficulty forced out. Thus, for example, when it is thrown into the legs and thighs, there is great hope that this matter may by fomentations, frictions, &c. be brought to such a state, that it may again be conducted through the several passages of the body, and driven out by stool, urine, and above all by sweats. But when it tends to the cavity of the skull, death quickly follows. It is at the same time evident, that we should carefully distinguish that swelling of the legs and thighs which follows delivery from a similar swelling, which in women with child, takes its rise from the womb's swelling, and compressing the veins which generally ceases of its own accord after delivery, whilst the womb subsides. For the first begins from the thighs, and then descends to the lower parts, makes greater resistance to the touch of the fingers, and the pressure not ceasing, holes are left behind: the last begins from the lower parts, ascends more slowly, is softer and yields with greater ease to the pressing finger; for it is a true anasarca sprung from the compression of the veins.

At the same time it is evident, that women who give suck to their children, run less risk from this cause, than those who decline doing it. The suction itself brings the milk into the breasts; but the keeping back such a change in the place of the milk, is dangerous.

I am not however of opinion, that the retention of the evacuations after delivery, is attended with no danger at all; but I thought it necessary to hint, that it was proper to take into consideration the milky matter's being deposited in several different parts of the body. For the evacuations after delivery, are according to the course of nature diminished, at the time that the milk fever generally begins, and they scarcely then flow out bloody, but rather somewhat purulent. On the first days of child-bed there seems

to be the greater danger to be apprehended from the retention of the secundines ; but less on the following days after the milk fever ; but so however, that if that purulent matter, which then usually runs out, be retained, there is great danger to be feared from its being carried back into the blood. Add to this, that the womb being hurt at delivery, an inflammation in it may often be the consequence ; hence the evacuations after delivery are suppressed ; of this we shall now speak.

Whilst the placenta is separated upon the exclusion of the foetus, a certain quantity of blood runs out, which is soon afterwards diminished, and then the secundines are stained with a less deep red. The air has then free access, nor can it be afterwards excluded ; hence there is reason to fear a sudden putrefaction of the blood, and other humours which are retained, either in the cavity of the womb, or in the hollow's which are in the very substance of the womb. The warmth of the place, the humidity, the approach of the air, are in every respect favourable to the putrefaction of the extravasated and stagnating humours : the same thing is to be feared from the remains of the dissolved placenta ; for whilst it still sticks entire to the womb, we may imagine that the humours are still carried through the placenta, and that therefore it does not rot so soon. But if the extravasated humours come out freely, there will be nothing to be apprehended from putrefaction. We should chiefly dread ill consequences from a too long delay in the cavity, or in the recesses of the womb, least the extravasated humours should rot, should injure the womb itself, or being carried back, should cause malignant fevers, or being deposited in other parts of the body, should infect them with putrefaction. For if so many and so great ills arise from a mild milky matter, what may there not be to be apprehended from a putrid humour. *Hippocrates*¹ has described

¹ De mulier. morb. lib. 1. cap. 37, 38. chapter Tom. VII. pag. 752.

described this corruption of the retained lochia, and has given us to understand that the womb is ulcerated by them, and that a dangerous fever is occasioned by the swallowing of this putrefaction; the only hope of cure he seemed to have, was from throwing this putrefaction out of the body before it had infected the whole mass of blood: *Quinto aut septimo die, quandoque venter turbatur & nigra & admodum graveolentia alias atque alias secedunt & urina quidem asinina. Quæ si secesserint, melius illi esse videtur & curata brevi convalescit; sin minus, periclitabitur vehementi alvi profluvio ipsi succedente:* “ Upon the
 “ fifth or the seventh day, and from time to time,
 “ black stuff of a very bad smell, is voided, and
 “ urine like that of an ass. If these are voided, the
 “ patient seems to be better, and being cured,
 “ quickly recovers; if not, she will be in great
 “ danger through a violent flux, by which she will
 “ be seized.” The looseness by which, before the patient’s strength is quite broken, that corruption is thrown off, is salutary; but when, the disease being long protracted, almost all the humours of the body are resolved into putrefaction; then they generally perish by a violent flux. From whence at the same time, it appears, that every flux is not to be dreaded during child-bed; yet this opinion has possessed the minds of many, when they have seen women who have born children, at last perish by a violent flux, occasioned by the suppression of the secundines. I very well remember, that whilst I took care of a woman that was just delivered of twins, I was very ill received by those present, because I was unwilling to stop the flux. On the third day, the evacuations were entirely suppressed; the belly was hard, and suffered pain. The softest fomentations being applied, the most gentle opening decoctions being copiously drank, green excrements extremely stinking, were voided, the patient seemed to have received great ease, and in a short time recovered.

Hippocrates^m has demonstrated, that the worst fevers are occasioned by the suppression of the evacuations after delivery, from the example of a woman who lay in by cold water in the island of *Thasus*, was delivered of a daughter, and yet had not been cleared of her secundines. On the third day after her delivery, she was seized with a dreadful acute fever, (*Φριξωδης*) she was troubled with deliriums, and her bowels were disordered with much thin matter mixed with aqueous bile. She was free from thirst, and many bad symptoms followed each other: after many critical, but imperfect efforts, after the lochia being transferred to the right hip, but without any good effect, after several variations of the fever, she at last died upon the eightieth day. *Hippocrates* remarked, that her urine was always black, thin and watery.

But it is uncommon for this fatal disorder to be protracted for so long a time as *Hippocrates*ⁿ has said in another place, speaking of the suppression of the evacuations after delivery: *Moriuntur autem aliæ alio tempore, prout corpus & affectio se habet. Verum unum & vigesimum diem non excedunt. Frequentius ita accidit*: “ They die some at one time, some at another, “ according to the state their body and their passions “ are in. But they do not pass one and twenty days. “ It generally happens so.” In his treatise upon epidemic disorders^o, we meet with an account of a woman who was with difficulty delivered of twins, who had not entirely got rid of the lochia; on the first day she was attacked with an acute fever, attended with watchings, pains of the head and neck, a delirium, urine thin and watery, afterwards black and other bad symptoms; this woman on the sixteenth day, died in a phrenzy. This is confirmed by the

^m Epidemic. lib. 3. textu 62. ægrot. 2. charter. Tom. IX. pag. 294.

ⁿ De mulier morb. lib. 1. cap. 37. pag. 751.

^o Lib. 3. textu 39. ægrot. 14. charter. Tom. IX. pag. 308.

the observations of Sydenham^p; he treated the suppression of the lochia with the utmost caution, and if he could not cure the disease immediately, he endeavoured to protract it : *Cum singulo quoque die curationis negotium magis magisque extra aleam ponatur & si ægra viceßimum diem superavit, jam fere in vado est* : “ A cure becomes every day less precarious, and if “ the person disordered passes the twentieth day, she “ is in a manner out of danger.” This method of Sydenham seems pretty much to coincide with the text of Hippocrates^q, especially if according to the Vatican edition^r, instead of αἱ μὲν τῶν ἢ βίασθεῖσθαι, we read μὴ βίασθεῖσθαι; for then the meaning is : *At si illi vel medicamentis vel sponte purgatio eruperit : id etenim accidit, si uteri os suum relaxaverint, non coacti a sanguine derepente confertim delato; si, inquam, eruperit, graveolentia & purulenta, repurgantur, interdumque etiam nigra: tumque melius erit & adhibita cura convalescet* : “ If she should have a purging, whether oc- “ casioned by medicines, or coming on of its own “ accord; for that happens if the womb is relaxed, “ their mouths not being forced thereto by blood “ suddenly brought thither in great quantities; I “ say, if such a purging should come on, foetid and “ purulent excrements are purged off; sometimes “ also the black are : and then the patient will get “ better, and recover perfectly if taken proper care “ of.” These things correspond perfectly with what has been said a little higher; for there comes out purulent excrements of a nasty smell; and if the clotted blood, melting when the putrefaction begins, should come out at the same time, there is a stink, and the spots found upon the linen are surrounded with a livid circle, and sometimes with a black one.

The suppression of the evacuations after delivery, is owing to two causes; for either they do not fall

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^p Dissertat. epistol pag. 535.
lib. 1. cap. 37. charter. Tom. VII. pag. 751.
pag. 900. No. 207.

^q De mulier. morb.
^r Ibid.

down into the cavity of the womb, or they are collected in the womb, and cannot come out if they have grown into large clots of blood, or if their passing through the orifice of the womb should be obstructed by any cause whatever: *Quum mulieri a partu purgatio fluit, non copiose procedit, inflammatis nimirum uteris, eorumque osculo concluso. Uteri autem stomachus (collum) in se concidit undique*: “ When a
 “ woman has a purgation after delivery, it does not
 “ come out in a great quantity; the womb’s being
 “ inflamed, and their mouths being shut. But the sto-
 “ mach, *i. e.* the neck of the womb, sinks down upon
 “ itself every way:” Men skilled in midwifery have observed, that after delivery, and the pulling out of the placenta, the neck of the matrix, like a little intestine, is found hanging in the upper part of the vagina, and is sometimes by ignorant midwives, taken for a body not belonging to that place, which they by a very pernicious and dangerous error, endeavour to pull away. But as the open vessels are sufficiently wide towards the cavity of the womb, the humours have a passage free enough to come into that cavity, except an inflammation quickly following, should cause the substance of the womb to swell, and thus these vessels should quickly be closed; hence an inflammation of the womb is justly looked upon as a very common cause of the suppression of the evacuations after delivery. Of this we shall speak hereafter. If the mouth of the womb should be stopped up with lumps of clotted blood, these should be taken out. See what has been said upon this subject in sect. 1322, and 1326.

But *Hippocrates* has likewise observed that the pudendum was closed at the time of delivery, which obstructed the free passage of the secundines: at the same time, however, such a præternatural closing of the womb might be the effect of such a suppression of the evacuations after delivery. His words are as follow:

follow^t: *Si puerperæ aliqua pudendi pars obturata fuerit (jam vero et id vidi) si os pudendi ulceratum fuerit & ubi in partu, per vim egresso puero, ulceratum fuerit contingitque quid aphtæ simile, valdeque inflammatur, & labra ex inflammatione, quum nimirum exulcerata fuerint, in sese concidunt, mutuoque cohærent. Sed et frigus fit & ambo labra occlusa sunt, quæ purgationis reliquias constringunt. Quod si purgatio prodiret, ulcera non itaque coalescerent:* “ If any part of the pudendum should be stopped up (for I have likewise
 “ seen that) if the mouth of the pudendum be ulcerated, and when it is ulcerated at delivery by the
 “ child’s coming out by force, and there arise pimples and a violent inflammation, and when the lips
 “ being ulcerated by inflammation, fall upon each
 “ other, and stick together. But there also arises a
 “ coldness, and both the lips are shut, whereby they
 “ press the remains of the lochia. But if the
 “ evacuation continued, the ulcers would not grow
 “ together.” How such a disorder should be treated, was shewn in sect. 1290, and sect. 1315.

It was before said in sect. 1290, where the causes of the retention of the menses were treated of, that the free flowing of the menses may be obstructed by the disadvantageous situation of the mouth of the womb. It was also observed when difficult delivery was treated of, that the oblique situation of the womb was often a cause of a woman’s being delivered with difficulty. But *Hippocrates* ascribes the obstruction of the evacuations after delivery to the same cause: *Si ex partu uteri in dexteram obversi fuerint, puerperii purgamenta non eunt, dolor inum ventrem, lumbos & ilia detinet crus dexterum gravatur, & torpor occupat, &c. Si uteri in sinistram partem, aut coxam, declinarint, dolor acutus et vehemens lumbos ac ilia, crusque, detinet & claudicat:* “ If after delivery the wombs
 “ are turned to the right, the evacuations do not go

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“ only

^t De morb. mulier. lib. 1. cap. 44. charter. Tom. VII. pag. 754.
^u De mulier. morb. lib. 2. cap. 28. pag. 816.

“ only freely, pain seizes upon the lower part of the
 “ belly, the loins and the bowels, the right leg feels
 “ pain, a numbness seizes, &c. if the wombs should
 “ decline towards the left of the hip, an acute and
 “ violent pain seizes on the loins, the flanks and the
 “ leg, and the patient becomes lame.”

It is very obvious that the same thing is to be apprehended in any other untoward situation of the womb. For if the orifice of the womb does not exactly answer to the vagina, the evacuations will be made with greater difficulty; nay they may be entirely suppressed, if the mouth of the womb being pressed against the adjacent parts, should be closed. How this turning of the womb should be remedied, has been shewn in sect. 1321.

But that suppression of the evacuations, which is occasioned by an inflammation of the womb, is most of all to be feared. In a difficult delivery, as has been said already, such violence is done to the womb, that it is sometimes broken: the head of the child, if it be of a bulk any way considerable in its passage, often bruises, and even tears the mouth of the womb; the substance of the womb is often injured by the placenta's being taken out with a rough hand by an unskilful midwife: so that it is not to be wondered at that the womb is inflamed after delivery, and that the evacuations are suppressed by such an inflammatory swelling. Such inflammations of the womb are with difficulty cured; but they often proceed to supuration, and sometimes to a gangrene, which causes death. *Hippocrates* * speaking of an ulcer in the womb, says, *Morbus autem præcipue ex partu invadit, si quid in ipsis dilanitatum computruerit*: “ But this
 “ disorder chiefly comes on after delivery, if any
 “ thing being torn in them has rotted.” If therefore such causes have preceded as might occasion an injury to the womb, then there is reason to fear that an inflammation of the womb may follow.

Hippocrates

* Ibid. lib. 1. cap. 63. pag. 765.

Hippocrates ^y enumerates the following symptoms of this disorder : *Si inflammatus fuerit uterus, vellicatur ; quod si quid corruptum fuerit, et recruduerit, febris corripit acuta & magna horrorque durus partes circa pudenda ; ferociter afficitur, mordetur & concilatur. Ac si quis digito contigerit, rursus pejus habet & pungitur, caput & sinciput dolet, tum caligo, tum frontis sudor adest, extrema perfrigerantur & tremunt, interdum etiam sopor occupat, neque audire potest, neque aliquid uterus efficit ; multum est cibi fastidium, neque stomachus, neque venter, omnino cibum attrahit ; vociferatur, profilit, dolet pubem, inguina, lumbos & occultos pudendi locos ; celeriterque intercunt :* “ If the womb should be inflamed, it is torn ; but if any thing should be corrupted, and should grow raw, an acute and violent fever ensues, and a strong shuddering seizes the parts about the pudendum ; it is affected in a strange manner, pinched and agitated. But if any one should touch it with the finger, it becomes worse, and feels a pricking ; the head and its forehead ache, there is a mist before the eyes, and sweating of the forehead, the extremities are cold and tremble ; sometimes too, sleep seizes the patient ; she cannot hear, nor does the womb effect any thing ; all food becomes tasteless, neither the stomach nor the belly attract the food ; they roar out, leap about, feel pains in their posteriors, their groin and their loins ; and in a short time die.” We meet with something of the same nature in another place ^z, where he describes the ill consequences which arise, *Si uteri ex partu inflammati fuerint ;* “ if wombs should be inflamed by delivery ;” he likewise adds some farther observations : *Ex ventre vero incendium nunquam desinit, sitit & coxendices dolent, imus venter vehementer interinescit, & alvus turbatur ; dejectio mala est, graveolens :* “ The heat from
P 3 “ the

^y De mulier. morb. lib. 2. cap. 50. charter. Tom. VII pag. 827.

^z Ibid. lib. 1. de morb. mulier. cap. 54. pag. 758.

& cap. 55, 56. pag. 759.

“ the belly never ceases, the patient thirsts, and her
 “ hips are in pain, the bottom of her belly swells ex-
 “ cessively, her stools are irregular, what she dis-
 “ charges is bad, and of a bad smell.” In *Aetius*^a,
 besides the general symptoms of an inflamed womb,
 those are enumerated which denote the different parts
 of the womb which are invaded by the disease. Thus
 if the cavity of the womb or its bottom should be
 inflamed, he tells us that great pain approaches; *Ut*
sæpe nec exterius quidem, tangi patiatur: “ So that
 “ frequently the patient cannot bear to be touched
 “ externally.” If an inflammation should seize upon
 the hind part of the womb, *Dolor lumbos magis vexa-*
bit, durique stercoris excrementa detinebuntur; quoniam
intestinum rectum opprimitur: “ The loins will be
 “ more and more pained, and the hard excrements
 “ will be voided with difficulty, because the rectum
 “ is oppressed.” If the foremost and lower region
 of the womb should be inflamed, there will be a dif-
 ficulty of urine for the same reason: *Si obliqua loca*
occupaverit, inguina extenduntur, & crura difficulter
moventur: “ If it should seize the oblique parts, the
 “ groins are extended, and the legs moved up with
 “ difficulty.”

Hippocrates^b has observed, that the belly and the
 bladder are bound by the scantiness of the evacuations
 after delivery; and in another place^c, that an in-
 flammation of the womb is succeeded by a strangury.
 All these symptoms of an inflamed womb, are to be
 found judiciously collected by *Moschion*^d; where is
 added from an observation of *Cleopatra's*, that the
 womb being inflamed, the tongue is found rough
 and black, as if it had been stained with ink; and
 that there is a pain in the extremities of the fingers
 and

^a Lib. 16. cap. 85. pag. 162.
 lib. 1. cap. 36. charter. Tom. VII. pag. 750.
 sect. 5. charter. Tom. IX. pag. 230.
 12, 13. & harmon. gynæc. pag. 23.

^b De mulier. morb.

^c Aphorif. 58.

^d Spach. gynæc. pag.

and the nails^c. All these bad symptoms which usually accompany an inflammation of the womb, have been observed by later physicians.

If we consider what has been said in sect. 1285 and 1293, of that surprising power by which a disordered womb can disturb all the functions of the body, it will not seem extraordinary, that an inflammation of the womb should be attended by such a variety of symptoms. At the same time it is worthy of notice, as the celebrated *Simson*^f has remarked, that the womb at the time of child-bed, is more easily irritated than at other times, and that hence by the slightest stimulating, and a passion of the mind, it is so bound, that the evacuations are instantly suppressed, and many ill consequences follow. *Hippocrates*^g after having enumerated the various ill consequences which follow, if the lochia are not thoroughly purged off, assigns this reason: *Quippe cum in molli parte & bene sensili existant, & in nervosa cavitate, multæ autem cum ea partes communicent, sinciput, stomachus, mens percellitur, depravatur nec facile intelligere solet*: “ For as they are in a soft and very sensible part and in the nervous cavity, and many parts communicate with it, the back of the head, the stomach, the mind is struck, is injured, nor can it easily understand.”

From hence likewise it appears, why men skilled in treating women in labour, are apprehensive of danger, if the quickness of the pulse, which arises at the time of delivery, is not allayed the first hour after delivery; for then there follows an acute disorder and an inflammation of the womb, with all its dreadful consequences, may justly be feared^h. The text of *Hippocrates*ⁱ, where he treats of the crisis's

P 4

and

^c Harmon. gynæc. par. noster. cap. 10. pag. 28.

inquiry in five essays, pag. 67.

cap. 42. charter. Tom. VII. pag. 753.

accouchm. pag. 134.

pag. 668.

^f An
^g De mulier. morb. lib. 1.

^h Levret l'art des

ⁱ In prognostic. charter. Tom. VIII.

and critical days of fevers, seems to refer to this. For he afterwards adds : *Ad eundem vero modum etiam mulieribus crises a partu contingunt* : “ For in the “ same manner crisis’s happen to women after delivery.” But this seems to obtain if they be seized with an acute disorder after delivery ; which chiefly happens after a difficult delivery, the womb being injured. *Galen*^k seems to confirm this in his commentary. These are his words : *A quo die mulier pepererit, ab eo numerare incipias, non a quo cepit febricitare ; nam aliquæ secundo vel tertio die, postquam pepererint in febrem incidunt, atque ab eo plerique futuram crisin enumerant. Verum res secus habet quum oporteat a die quo fœtum edet enumerationem exordiri* : “ You “ should begin to reckon from the day upon which “ the woman was brought to bed, not from the “ day on which her fever began : for some on the “ second or third day after delivery, are seized with “ a fever, and most physicians compute the crisis “ coming on from that. But the case is otherwise, “ as the computation should be begun from the day “ on which the child was born.” For the milk fever which begins on the second or third day, soon ceases by a gentle sweat, without any critical discomposures. Thus in the text of *Hippocrates*, cited awhile ago, a woman who had been delivered of twin daughters, but with difficulty, was upon the first day attacked by an acute fever, and bad symptoms having occurred on the eleventh and fourteenth days, she died raving mad on the seventeenth day. Also that woman who was brought to bed in the island of *Thasus*, of whom mention has been made, is said to have been attacked by an acute fever on the third day after delivery ; yet *Hippocrates* seems to have computed the course of the disease from the day of delivery. For he remarks that, *Multo tamen ante partum febriculosa decubuerat cibumque fastidierat* : “ A long time before “ delivery, she was taken ill of a fever, and loathed “ her

^k In prognostic. charter. Tom. VIII. pag 668.

“ her food :” nor is it credible that that fever ceased immediately after delivery, but with horror degenerated into an acute fever, which however partook of the nature of the slow fever which had afflicted her before delivery, as she died upon the eightieth day¹.

From hence it is evident that the suppression of the evacuations after delivery, is justly looked upon as dangerous: *Nisi enim a lochiis mulier repurgetur, magno morbo corripitur, vitæque periculum incurret, nisi cito curetur, & aliquis convenientem ipsi purgationem promoveat*: “ For except a woman be freed from her
 “ secundines, she will be seized with a great disease,
 “ and her life will be in danger if she is not quickly
 “ cured, and if some one does not promote her pur-
 “ gation in a proper manner.” Above all, if an inflammation of the womb should be the cause, or the consequence of a suppression of the evacuations after delivery: *Nisi statim curentur, plurimæ intereunt*: “ Many perish if they are not immediately cured^m.” To this the following prognostick seems to refer: *Uterinæ in ventribus durities cum dolore, acute perniciosum*: “ A hardness of the womb attended with pain
 “ is exceeding dangerousⁿ.”

We have hitherto chiefly spoken of those disorders which arise from the ill condition of the womb, and the retention of the secundines, as likewise of those which arise from a removal of the milky matter to another place. But it is easy to conceive that the retained lochia themselves, being rendered more sharp by delay, being sucked in by the vessels of the womb, and afterwards deposited on the several viscera, may produce most dangerous diseases. The celebrated physician *Targioni Tozzetti*°, well known
 in

¹ Epidemic. lib. 3. text 62. ægrot. 2. charter. Tom. IX pag. 294. ^m Hippocr. de morb. mulier. lib. 1. cap. 54. charter.

Tom VII. pag 758. ⁿ Coac. prænot. No 528. charter.

Tom. VIII. pag. 883. • Prima raccolta di osservazione mediche, pag 92, &c.

in the learned world by many other writings, has inserted amongst his observations, one or two which relate to this, and which he has taken from an anatomical and physical treatise of an author who is not certainly known, who lived in the sixteenth century, and seems to have faithfully related those things which he had seen with his own eyes; at the same time he added very elegant figures of the parts which he treats of. He dissected the body of a woman, who the day after her delivery, was seized with a violent epilepsy, insomuch that she bit off her tongue; afterwards she died of an apoplexy, having for three days together remained speechless. He found the womb swelled above the thickness of a thumb's breadth in substance, hard, fleshy, the spermatic vessels were of the thickness of a thumb's breadth, swelled, darkish, as it were filled with clotted blood, which after delivery should have been voided by the womb: the testes, which are generally called the horns of the womb, he found swelled. In the cavity of the womb he found thick, black blood, sticking so fast to the cavities of the huckle-bones, that it could scarce be forced from thence; this seemed putrified: *Cotyledones autem sunt venarum uteri oscula parva ut puncta viderentur subnigra. Caro vero seu substantia uteri carnosæ, & alba erat et dura & per ipsam arteriæ & venæ transibant, ut si quis acu istum librum perforaret, & cum per transversum secaretur caro, profluebat sanguis, quasi si quis acutissima illam perforasset. Os uteri habebat duos veluti musculos parvos intra se, et tenues, sive membranæ alicujus partes videantur, utrimque claudentes os ipsum, ut ne acus quidem immitti posset, gravida existente muliere; sic mihi ostendit magister Gulielmus Barbitonsor, &c.* “ The cotelydones
“ are little mouths of the veins of the womb, so
“ that they seem blackish points. But the flesh or
“ the fleshy substance of the womb was white and
“ hard, and through it the arterias and the veins
“ passed, as this book would appear if a person should
“ pierce

“ pierce the paper with a needle, and when the flesh
 “ was cut across, the blood spurted out, as if it had
 “ been pierced with a needle extremely sharp. The
 “ mouth of the womb had, as it were, two little
 “ muscles within itself, so thin that they seemed to be
 “ the parts of some membrane which close the mouth
 “ on either side in such a manner, that even a nee-
 “ dle cannot be thrust into it, whilst the woman
 “ is big with child: master *William* the barber,
 “ demonstrated this to me, &c.” Hence he in-
 ferred that this woman died of a retention of the
 lochia, which on the first day had flowed copiously
 enough, the matter being transferred to the brain: at
 the same time he remarks, that she a year before had
 had some epileptic convulsions at night: *Conjecit quo-*
que, maximum laborem fuisse illi in partus exitu ad os
uteri; nam totum erat lividum quasi ictum esset baculo
aut saxo: “ He also conjectured that she had great
 “ pain in delivery at the mouth of the womb, for it
 “ was entirely livid, as if it had been bruised with a
 “ stick or a stone.” He was surprised in the dissec-
 tion of a head, when the pericranium was separated
 from the skull: *Profusisse tantum sanguinis aquosi, ac*
tenuis & serosi ut cranium videretur simile esse cribro, &
ab ipsomet esse emanabat nec decipiabar, videbaturque
illud cranium esse veluti perforatum, eratque, colore sub
obscuro, livente & videmus venas duræ matris fuisse in
causa hujus fluoris & effusionis, &c. “ That it poured
 “ out so much watery, thin and serous blood, so
 “ that the skull seemed to resemble a sieve, and it
 “ flowed from the bone itself, nor was I mistaken;
 “ and that skull seemed to be as it were bored, and
 “ it was of a darkish, livid colour, and we perceived
 “ that the veins of the dura mater, were the cause of
 “ this flowing and gushing out of blood, &c.” He
 then adds: *Notavi quoque cum pericranium a cranio se-*
pararetur, quasi aliquod putre divelleretur ab osse, sic
nullo momento, ac ut rem fracidam, illud ab osse sepa-
rari: “ I have likewise remarked that whilst the pe-
 “ ricranium

“ricranium was separated from the skull, something
 “rotten seemed to be pulled from the bone with as
 “much ease, as if something putrified had been se-
 “parated from the bone.” Upon this occasion, the
 pericranium, the skull, and the dura mater, seem to
 have been chiefly injured; for he mentions nothing
 of the other parts contained in the hollow of the skull.
 But soon after he adds what follows: *In domicella de*
Mauvoisin, quæ obiit a partu epileptica una & apo-
plectica, secta observavi totum ventriculum sinistrum ce-
rebri fuisse plenum aquoso sanguine, seroso, putri, ac
pravi coloris & venas plexus retiformis una cum arteriis
fuisse tumidas, quasi insufflatas, subnigras, quæ notæ
erant partis non naturaliter affectæ: “In a gentle-
 “woman of *Mauvoisin*, who died after delivery of
 “epilepsy and apoplexy, I observed upon dissection
 “that the whole left ventricle of the brain, was full
 “of a watery, serous, putrid blood, of a bad co-
 “lour, and that the veins of the membrane, formed
 “like a net, were swelled as well as the arteries, be-
 “ing as it were, bloated, blackish, which were
 “symptoms of the parts not being in its natural
 “state.” These symptoms passed to the inner part
 of the head by a fatal change; nor did he find the
 vessels broke, but swelled and stuffed.

It is easily conceived that the secundines deposited
 at the several viscera, produce different diseases, ac-
 cording to the diversity of the functions which spring
 from these viscera. *Hippocrates* ^p has described a
 multitude of these disorders; *Si vero mulieri puerperii*
purgatio ad caput irruat (id enim contingit) plerumque
statim moriuntur, si detineatur, &c. Si vero per os non
prodeat puerperii purgatio, sed cum impetu delata sur-
sum vertatur, puerperia (lochia) delitescent, neque pro
ratione procedent, tussis et asthmata illam corripient, op-
pletoque a sanguine pulmone, latus & dorsum ipsi dole-
bunt valde. Quumque tussit, siccum per tussim rejicitur;
alias

^p De mulier. morb. lib. 1. cap. 45. charter. Tom. VII. pag.
 755-

alias vero spumofum expuitur. At progressu temporis sputum subnigrum et turbidum apparet, pectora calor magis quam reliquum corpus detinet, nimirum sanguine ipsa calefaciente, &c. Quod si purgatio impetu sursum delata per os non exeat, neque ad pulmones vertatur, ei ad faciem puerperia divertent, quæ admodum rubicunda erit, & caput grave, neque id citra dolores movere poterit, oculi etiam valde rubicundi erunt, et ex ipsis sanguis tenuis effluet. Est, ubi etiam nonnullis sanguis per nares effluit, qui si effundatur, hoc modo morbus diuturnior evadit: “ But if the lochia should ascend to
 “ a woman’s head (for that sometimes happens) she
 “ generally dies immediately if they remain there;
 “ but if the lochia do not come through the
 “ womb, but being carried with violence, are turned
 “ upwards, they lie concealed, nor do they come
 “ out as they should do; a cough and asthma will
 “ seize her; her lungs being filled with blood, her
 “ back and side will feel great pain. But when she
 “ coughs, something dry is thrown out by the
 “ cough; at other times something frothy is spit
 “ out. But in process of time, the spittle appears
 “ blackish and thick; there is more warmth in the
 “ breasts than in any other part of the body, the
 “ blood itself warming them, &c. But if the lo-
 “ chia carried with violence upwards, do not pass
 “ through the mouth, nor are turned towards
 “ the lungs, they will turn to the face, which
 “ will be very red, and the head heavy, nor will
 “ it be able to move without pain; the eyes will
 “ also be very red, and thin blood will flow from
 “ them. Sometimes there runs some blood out at
 “ the nostrils; if this should be poured out, the dis-
 “ ease will become more lasting.” In another place ^a
 he gives us to understand, that some parts of the
 body may be rendered incapable of motion, and that
 a lameness

^a De mulier. morb. lib. 1. cap. 41. charter. Tom. VII. pag. 753.

a lameness may be occasioned by too tardy a flowing of the secundines.

All this may happen to women in the most perfect health, from whom the purest blood flows after delivery, as if it flowed from a victim; for it may be corrupted in the cavity or recesses of the womb by delay alone, and putrid filth sprung from thence may be sucked in, and afterwards by its several changes may produce various, and most dangerous diseases. There will be still greater danger to be feared, if before delivery the humours have degenerated much from the conditions required by health. *Hippocrates* * has given us to understand, that in places whose inhabitants drink standing waters, women are troubled with swellings and with white phlegm, and can scarce conceive: *Neque purgationem post partum in his mulieribus commodum contingere*: “Nor does a due purging after delivery, happen in such women.” In another place † he said, *In gestantibus uterum salsuginosa, significant post partum molestias ex albis mordacibus. Tales purgationes indurant; singultus in his malum & uterorum procidentia, quæ et una interficit*: “In women with child, salt humours denote that after delivery there will be pain occasioned by sharp, biting particles. Such purgings make hard: in these, sobbing is a bad symptom, so is the falling of the womb, which happening once, is fatal.” And a little after ‡, *Uterum gerentibus salsuginosæ juxta fauces fluxiones, malum*: “In women with child, saltish runnings by the narrow passages are bad symptoms.” For it was said before, that after the vessels of the womb distended with blood, were evacuated, the secundines came out on the third day, having the properties of pus, and thus the hollow surface of the womb is purged. But it was demonstrated in sect. 387, that mild humours are required, that

* De ære, locis & aquis, cap. 3. text. 7. charter. Tom. VI. pag. 105.
 † Coac. prænot. No. 526. charter. Tom. VIII. pag. 883.
 ‡ Coac. prænot. No. 537. ibid. pag. 884.

that a kindly suppuration may come on. But in a woman in such a state, the sharp humours flow to the womb; whence its sensible surface will be too much irritated.

For the same reason, the diseases that precede delivery are to be taken into consideration. *Hippocrates* has said ^u, *Quæ ante partum in modum cholerae morbum doluerunt, facile quidem pariunt; verum si febricitent, maligne habent, tum alias, tum si circa fauces quid vexet vel aliquod signum mali moris in febre appareat:* “ Those who before delivery have been affected as it “ were, with the disorder called cholera, are delivered with ease; but if they should be seized with “ a fever, they are in a bad way, as well in other “ cases, as when any thing gives them pain “ about the fauces; or if the fever is attended “ with any bad symptom.” He foretold it of women who are troubled with phlegm or with the spleen^x; that lochia of a bad colour would come out, and that there was some danger of their being suppressed. In another place ^y he has given us to understand, that, *Si mulier uterum gerens morbo aliquo minime cognato laboret, in puerperii purgatione perit:* “ If a woman with child should be troubled with “ any disorder of a quite different nature, she dies “ during the evacuations after delivery.” The observations of more modern physicians confirm this. Thus *Hoffman*^z: *Quando gravidæ ultimis præsertim mensibus, cum æstu interno de virium debilitate valde queruntur vidit sæpe & prædixit, in puerperio pravos eventus:* “ When women with child, especially in “ the latter months of their pregnancy, complain “ much of weakness, accompanied with internal “ heat, he has often seen and foretold bad consequences in the delivery.’

It

^u Coac. prænot. No. 535. ibid. pag. 883.

^x De mulier.

morb. lib. 1. cap. 28 & 29. charter. Tom. VII. pag. 746, 747.

^y De natur. puér. cap. 5. charter. Tom. V. pag. 315.

^z Me-

dic. ration. & syst. Tom. IV. part. 2. sect. 1. cap. 1. pag. 25.

It was said before, that the womb is sometimes inflamed by a retention of the lochia, and sometimes by laborious delivery; and that being inflamed by the rude handling of the midwife, it occasioned a suppression of the evacuations after delivery. The symptoms of an inflammation of the womb have been already treated of. But such an inflammation will be cured either by a gentle relaxation, or it will go through the other stages of an inflammation, as suppuration, gangrene, mortification, and a schirrous tumour, which may give occasion to a cancer of the womb. But sometimes a violent inflammation of the womb, so oppresses the brain, and disturbs its functions, that death would follow before the several stages of inflammation could succeed each other. It was said already in sect. 432, that a gangrene of the viscera is mortal; but that one in the genitals is very hard to be cured; at the same time, some cases of gangrenes in the genitals cured, were related; chiefly from the observations of *Ruisch*. That is, whilst the vagina bruised by a difficult delivery, and the intestinum rectum wasted away with a gangrene, and being afterwards corrupted, were by suppuration separated from the whole parts; the woman who had been delivered, still surviving. For when a head of a considerable bulk sticks a long time in the passage out of the pelvis, all the neighbouring soft parts are so compressed to the hard bones of the pelvis, that all circulation of the humours, through the compressed parts, is totally obstructed; whence follows a gangrene. It admits of no doubt that such gangrenes have been sometimes cured. But if the gangrene be caused by a great preceding inflammation of the womb, I do not know that it has appeared by any observations, that such a gangrene was ever cured; and I believe no body will doubt, that if such a cure is made, it is but very rarely. But as a gangrene can never be cured but by causing suppuration, by means of which, the dead and cor-

rupt

rupt flesh is separated from that which is found, it will be worth while to say something of ulcers in the womb. The schirrous tumour and the cancer, have been already spoken of; nor does this seem the proper place to treat of these consequences of the inflammation. For they are not properly in the class of diseases of lying-in women, as these disorders are incident to those women who are just out of child-bed, and are scarce ever observed before.

It is at the same time obvious, that we are not here to understand that slight and gentle suppuration, by which the hollow surface of the womb is cleansed, as was said before: but what we treat of here is suppuration, produced in the very substance of the womb, when there has been an inflammation in the case before. *Hippocrates*^a has given us his advice concerning these disorders: *At cura cito adhibenda est, si ulcera in utero fuerint. Nimirum enim tenero in loco sunt, celeriter increscunt, brevique putrescunt*: “But care is
“speedily to be taken, if there should be ulcers in
“the womb. They are then indeed in a tender
“place, they quickly grow, and as quickly pu-
“trify.”

It is known by the preceding inflammation, and the symptoms of a beginning suppuration, which have been often treated of in the chapter upon the abscess, and amongst the inflammatory disorders of the viscera. If therefore pain should continue obstinately about the womb, and without very bad symptoms, a suppuration of the womb should be expected: *Dolor ventris post partum, in his purulenta purgant*: “When there is a pain in the belly after delivery,
“these evacuate purulent matter^b.” There is at that time a slight fever in the case, which generally accompanies suppurations any way considerable, especially in the bowels. Wherefore *Celsus* has given us

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to

^a De mulier. morb. lib. 1. cap. 66. charter. Tom. VII. pag. 768.

^b Coac prænot. No. 520. charter. Tom. VIII.

to understand, that, *Si mulieri ex inguine febricula orta est, neque causa apparet, ulcus in vulva est*: “That if
 “a woman should have a fever, which should take
 “its rise in the groin, and the cause not appear,
 “there is an ulcer in the womb.” If such an imposthume should grow in the womb, it were to be wished that it would break in such a manner that the pus might come through the parts; for so they are more speedily cured. But if the pus should endeavour to come out by another passage, cure is greatly protracted, and sometimes is obtained with great difficulty. This will likewise hold if the pus gathered in the substance of the womb, is removed to other parts of the body.

Sometimes an imposthume of the womb draws its collected pus towards the outward parts of the body. Wherefore *Hippocrates*^d has informed us: *Si uterus, ischio incumbens, suppuratus fuerit, necesse est, illum linteis carptis curari*: “If the womb, which lies upon
 “the ischion, should be suppurated, there is a necessity of dressing it with lint.” For then the hands can have access, whilst the ulcer of the womb is opened on the outside; wherefore there will be occasion for lint and many other things of that nature; and for that reason *Galen*^e informs us, that such disorders were by *Hippocrates* called *εμμοτα*; this subject has been treated of upon another occasion. Some such cases I myself have seen, but the cure was always tedious, and sometimes the tumour remained though the patient’s health was in other respects pretty well restored.

We meet with such a case in the works of the celebrated *Benevoli*^f, of a young woman, in whom the evacuations were suppressed five days after a difficult delivery, there being at the same time a violent fever in the case, together with a stretching of the abdomen,

^c Lib. 2. cap. 7. pag. 60.
 ter. Tom. IX. pag. 223.

^d Aphor. 47. sect. 5. char.

^e Ibidem.

^f Disserta-

zioni ed & osservazioni, &c. No. 36. pag. 217.

men, a tumour, vomiting, scanty urine, and the other symptoms of an inflamed womb. Recourse was had to the most efficacious remedies in order to dissipate this inflammation; but all the symptoms continued, even to the 25th day; then the fever began to abate; the worst symptoms discontinued, the abdomen remaining tense and tumid for six months and upwards, chiefly about the right side of the third of the small guts, where was felt a hardness confined to that place. After six months more she was attacked by a severe cough; whence that hard swelling which before lay more deep, began to proceed towards the outward parts. Three months more being elapsed, she implored the assistance of *Benevoli*, who having carefully examined all the symptoms, concluded that there was an abscess at the bottom, applied fomentations, and opened the place in sixteen months after delivery; which being done, there came out good pus, but in a very small quantity; as much, for example, as might seem capable of being contained under the coverings, nor did any thing seem to come from the innermost parts. But in eight or ten days after the opening of the tumour, the patient was seized with cold, with a fever, and the next morning upon changing the dressing, there was found a quantity of liquified and stinking pus; such matter continued to run out, nor was its quantity increased, if the adjacent parts were pressed with the hand. On every eighth or tenth day the fever returned, and a more copious evacuation of pus followed during the space of about three months. During all this time there was nothing farther done but keeping the lips of the wound remote from each other, that the pus might have a free exit. Nor did any thing purulent ever come from the vagina; and at the usual time the patient had her monthly evacuations, though she was greatly emaciated by the disease. In the twentieth month there was a gangrene on the wound, which being separated, the aperture was greatly in-

creased, but afterwards it was diminished; the little orifice which gave a free passage to the pus, continuing. Thus the fistula remained incurable, as it could not possibly be cut without danger, because a probe being put in, could be forced down six fingers breadths in a transverse, and tolerably deep direction.

We meet with an extraordinary case of suppuration upon the suppression of the evacuations after delivery^s. After a laborious delivery of twins, a woman's evacuations were suppressed entirely by excessive terror, and the suppression was attended with a stretching and violent pain of the abdomen. Upon the application of the softest fomentations, and the injection of clysters of a similar nature, bleeding in the arm being reiterated, the vehemence of the pangs was in some measure mitigated; and yet they never ceased during forty days and upwards. The swelled belly was of greater bulk than before delivery. The pains are on a sudden increased, and an aperture is spontaneously made, as well on the side as towards the lower parts, about the distance of four fingers breadth from the navel; by this aperture there ran out several pounds of pus, sufficient to fill a tub: the pus continued constantly to run out of the vast abscess till it was emptied. A very simple dressing being applied, the patient in a short time recovered. Hippocrates^h treating of this disorder, recommends the use of milk, and afterwards he said: *Post lactis autem potum, cibus quam maxime incrassandum & ut utero gestit procurandum; sana enim evadit, plerumque autem ex hoc morbo evadunt & steriles redduntur*: "After having drank the milk, she should be fattened as much as possible with food, and her pregnancy will be promoted; for she will perfectly recover. Women generally recover of this disorder, and become barren." This woman however, after having gone

^s La Motte traite complet de chirurg. Tom. I. pag. 268.

^h De mulier. morb. lib. I. cap. 62. charter. Tom. VII. pag. 764.

gone through so severe a disorder, was several times afterwards delivered.

It sometimes happens that pus gathered in an ulcer of the womb, being sucked in, comes out at another place. Thus I saw in a woman with child, who was troubled with that species of dropsy, called anasarca, a pain tolerably intense seize upon the right side of the last of the small guts: after delivery, a pus of a most nauseous smell run out of the pudendum, which in a quantity diminished by degrees, and afterwards white and destitute of smell, flowed constantly till the seventh month after delivery; at the same time there was a weakness in the right leg and thigh; then the pus flowed from the right breast, and the patient recovered slowly.

In another lying-in woman, I found that a looseness, attended with a most shocking smell, succeeded to all the other symptoms of an abscess, formed in the right side of the last of the small guts; at the same time, a certain quantity of similar matter, began to flow from the womb, which gave the patient some relief, and the appetite was restored which had begun to fail. She then began to spit out matter of the same nature, and that in great quantities; this patient likewise recovered slowly.

As the pus, already collected in the womb, is sometimes evacuated at other places, in like manner when it comes from other parts, it is sometimes evacuated by the womb. *Hippocrates*ⁱ has made this distinction, and has told us the symptoms by which this may be known: *An vero ab ipsis sint uteris, hoc pat̃o dignosces. Qua enim ab ipsis ulcerationes sunt, purulentam & compactam purgationem exhibent; quæ vero non ab ipsis, tenuem & saniosam:* “ But whether
 “ they come from the wombs themselves, may be
 “ known in this manner. Those ulcerations which
 “ proceed from the wombs themselves, void puru-
 “ lent and thick matter; those which do not come
 “ from

Q 3

ⁱ Ibidem, cap. 65. pag. 766.

“ from them, a thin and corrupt matter.” Whatever has been before said concerning the cure of internal ulcers, may likewise be applied upon this occasion: *Ulceræ (uteri) vero curanda sunt, ut illa quæ in reliquo sunt corpore, studendo ut inflammatio arceatur, regurgentur, impleantur, & ad cicatricem perducantur. Aqua autem potui danda est, vinum minime, cibique pauci, non multi*: “ The ulcers of the womb are to
 “ be cured like those which are in the rest of the bo-
 “ dy; care should be taken to keep off inflammation,
 “ to cleanse them, to fill them, and to bring them to a
 “ scab. Water is to be given for drink, wine by
 “ no means, and meat sparingly^k.” *Hippocrates*^l recommended gentle remedies, and food of a similar nature, when an ulcer of the womb, which we are here treating of, is in the case; namely, that sort whose matter was not brought from another place, but was engendered and gathered in the substance of the womb itself: *In quibus autem purulenta & compacta destuunt, in his quidem universum corpus nullo modo movere oportet, sed colluere & ex his totam curationem moliri*: “ In such ulcers as purulent and thick mat-
 “ ter flows from, it is by no means proper to move
 “ the whole body, but to rinse them, and in this
 “ manner perform the whole cure.” For though the cleansing of ulcers when they are dirty, sometimes requires stronger remedies, great caution should be used in a part so extremely serviceable, and which has so much influence over the rest of the body. *Harvey*^m treated an ulcer of the womb, which when he undertook, it was of a pretty long standing; but when the common remedies had but little effect, he thought proper to have recourse to more powerful ones, adding a little Roman vitriol to the usual injections: *A cujus acrimonia percussus uterus subito se contraxit, induruitque adeo ut ad tactum lapide rigidior sentiretur; simulque plurima symptomata hysterica oborta sunt*;

^k Ibidem, cap. 66. pag. 768.^l Ibid. cap. 65. pag. 767.^m Exercitat. de generat. animal in capit. de partu, pag. 3/9.

sunt; quæ ab uteri strangulatu, tetrisque inde vaporibus sursum latis, medici vulgo fieri existimant. Duravit aliquandiu hoc malum, donec a mitioribus & anodynis remediis placatus uterus orificium suum laxaret, liquoremque acrem (quem iniecerem) una cum saniosa putrilagine expelleret: “ By whose acrimony the womb being affected, suddenly contracted itself, and it grew so hard, that it seemed to the touch to be harder than a stone; at the same time there arose several hysterical symptoms, which are generally thought by physicians to spring from a stoppage of the womb, and noxious vapours rising from thence. This disorder continued for a time, till the womb being eased by mild and gentle remedies, relaxed its orifice, and threw out the sharp liquor (with which I had injected it) together with corrupt and putrified matter.” This useful observation teaches us what great evils might arise if the womb should be irritated, whether this were occasioned by a sharp remedy, or by any other cause whatever.

S E C T. MCCCXXX.

ALL these disorders are fully removed by removing the cause of the disorder. (§ 1329.)

As all these disorders owe their rise to the suppression of the evacuations after delivery, the evacuations returning, all these symptoms will either diminish or entirely cease. It appeared by the preceding paragraph, that the suppressed evacuations produce a variety of different disorders, according as they are carried to one or other of the viscera; and *Hippocrates*ⁿ has given us the same information; his words are; *Si ex partu minime purgata fuerint, venter & crura tument, et rigor & dolor inum ventrem occupat,*

Q 4

quandoque

ⁿ De natur. muliebri cap. 9. charter. Tom. VII. pag. 685.

quandoque etiam ad viscera progreditur: “ If she has
 “ not been thoroughly purged after delivery, the
 “ belly and the legs swell, coldness and pain seize
 “ upon the bottom of the belly, and it sometimes
 “ reaches even to the bowels.” Something of a si-
 milar nature we meet with elsewhere^o. Besides^p
 speaking of a lying-in woman, from whom, *Primis*
tribus aut quatuor diebus puerperii purgatio prodierit,
deinde ei derepente perdatur: “ On the first three or
 “ four days of her lying-in, the secundines were
 “ evacuated, and then the evacuations suddenly dis-
 “ continued,” he adds: *Si vero curetur victus ratione*
mulier, supererit, si cito curetur: “ But if the woman
 “ be prescribed a proper regimen, she will recover,
 “ if speedy care be taken of her.”

But if the frame of the viscera, has been very much
 hurt by a metastasis of the lochia, although the lochia
 should return, perfect health will not follow, but
 there will remain a defect in some of the functions,
 and that sometimes during the remainder of the pa-
 tient's life. Whence in another place^q, where he
 treats of the lochia rushing to the head, the sto-
 mach and the lungs; he gives us to understand that
 the women in labour generally dies directly: but if
 she should live, the lungs often are vitiated, and a
 cough and asthma follows: but if the lochia
 should be turned towards the head, *Mente alienabitur*
& dilirationes furiosæ existent: “ She will lose her
 “ senses, and be seized with terrible deliriums.” He
 then adds: *At curata convalescet; non autem multa*
spes est, illam superesse; ac si forte supersit, surditas aut
in totum cæcitas succedet: “ But if she be taken care
 “ of, she will recover, but there is but little hope that
 “ she will live; and if she perhaps should live, deaf-
 “ ness or a total blindness will follow. Sydenham^r
 has confirmed this by his observations, in treating of
 the

^o De morb. mulier. lib. 1. cap. 40. ibid. pag. 752.

^p Ibid. cap. 39.

^q Ibidem, cap. 45. pag. 755.

^r Dissertat.

epistol. pag. 531, 532.

the disorders which follow a suppression of the evacuations after delivery : *Nonnunquam enim phrenesi laborant ex hac occasione, quæ indies effractor reddita spasmos primum, dein mortem infert : si vero mortem, evadant, mitius aliquantum insaniunt, quandoque ad ultimum vitæ terminum :* “ For sometimes they are attacked “ with a phrensy upon this occasion, which becoming “ more dreadful every day, first brings on convulsive motions, and then death ; but if they should “ escape death, their phrenzy is sometimes mitigated, “ but they frequently continue somewhat crazy to “ the end of their lives.” I have often been the sorrowful witness of such cases.

From thence it is evident that perfect health then only follows upon the returning of the evacuations after delivery, which had been before suppressed ; if this should happen quickly, and none of the viscera be remarkably injured by the transferring of the secundines.

S E C T. MCCCXXXI.

FOR this reason there are required gentle alcalic remedies, in order to assuage the acid corruption of the serum ; gentle diluents from barley, oaten and almond broths ; gentle specific opening remedies, from moderate cordials and uterines ; local opening remedies, clysters, fomentations, cataplasms, plasters, medicines of a middle nature, between an oil and an ointment, cupping-glasses, oblong medicines, such as are thrust up into the neck of the womb, and suppositories or compositions of honey, salt, and purging powders.

We come now to speak of the method of treating lying in women, to prevent a suppression of the evacuations

cuations after delivery, and to indicate the methods which may be safely attempted, in order to excite the evacuations after delivery, when either suppressed or too scanty.

Here we should chiefly attend to what has been said in sect. 1329; namely, that the evacuations were naturally very much diminished; and that about the third or fourth day, they are scarcely bloody, but that then some stuff of a purulent nature comes out, by which the hollow surface of the womb is cleansed; it would therefore be badly consulting the welfare of women in labour, to give them then such remedies as might force out the secundines. But whilst the breasts begins to swell, then the force and quantity of the humours is turned from the womb, and tends towards the breasts; whence the evacuations in women who give suck to their children, are *cæteris paribus*, more scanty than in others; but in those whose milk should be sucked out whilst this is done, the evacuations are always increased.

A compleat composure both of body and mind are absolutely required. For it can scarcely be believed how easily moved the whole nervous system is in lying-in women, especially if they be tender, delicately brought up, and subject to hysteric disorders. *Peu*^s has proved by many examples, the sad effects of anger or terror. I have sometimes seen examples of the like nature. The troublesome visits of their friends, who come to congratulate them, are oftentimes very hurtful; this pernicious custom has obtained chiefly amongst the nobility; and it was with difficulty I could prevail to have those who came every day to congratulate the woman in child-bed, (either through friendship or in compliance with the fashion) shewn into a room at some distance from her. If amongst those matrons, there should be but one who should renew the memory of a concealed resentment, the worst consequences are to be feared.

Perfumes,

^s La pratiqu. des accouch. liv. 1. chapit. 8. pag. 75, &c.

Perfumes, which some use to such excess, that even after they have changed their clothes, their skin remains full of them, have often such effect upon lying-in women, that violent head-aches, deliriums, and suppression of the evacuations after delivery, are often occasioned by them^t. I have seen many such cases; wherefore it is customary to tie to the beds of lying-in women, little knots composed of foetid uterine medicines: *Assa fætida castoreum*, &c. which are sometimes troublesome by their bad smell. All these inconveniences may be obviated, if the lying-in women are kept perfectly quiet, and all things avoided which can any way discompose their bodies or minds. This necessary caution has been already treated of in sect. 1329. Sydenham^u was for having the repose of lying-in women protracted for several days. For he was of opinion that scarce the tenth part of those who die in child-bed, perish through want of strength, or the fatigue they have undergone, but only because they have quitted their beds before it was proper: *Quamobrem istis quæ me audiunt, ubique auctor sum, ut ad diem saltem decimum in lecto se contineant, si modo naturæ paulo debilioris sint, præcipue si vaporibus, qui vulgo dicuntur jam pridem fuerint tentatæ*: “Wherefore I advise all who hear me, to keep their beds to the tenth day, at least if they be of a weakly frame, especially if they have been heretofore attacked by vapours, as they are commonly called.” It is generally observed in robust women accustomed to bodily labour, that they have no occasion to keep their beds so long. Levret^x commanded that particular caution should be observed with regard to such as have feeble bodies, and have led a sedentary life, that they should not stir from their beds before the twelfth day, for fear of a falling of the womb.

It was said in sect. 1329, that the abdomen should be gently bound with linen swathe. Nothing is more

^t Ibid. pag. 230.

^u Dissert. epistol pag. 532.

^x L'Art des accouch. pag. 139.

more hurtful than to bind the belly strongly with swathes. *Peu* was surpris'd at coming to a young woman whom he had happily brought out of danger, to see her, on the second day after delivery, lie anxious, with sparkling eyes, and incapable of sleep, on account of a violent head-ache; she had also a sickness in the stomach, a faintness, stinking belches, a pain in her left side, a suppression of the evacuations after delivery; she was immediately bled twice in the arm, and thrice in the foot, and yet all the symptoms were increased; the cause of all this suffering being farther inquired into, the abdomen was found so strongly bound with a roller, that it seem'd surprizing that she was able to breath. The roller was loosened, the evacuations presently returned, and all those bad symptoms vanished. He in the same place relates many similar cases.

The chief care to be had is, least the urine should be too long retained in women who have been just delivered. For whilst the womb being now empty, the abdomen is become flaccid, the bladder is easily distended without any trouble, and they often do not perceive any difficulty in making water, before the bladder has been distended beyond measure, and has lost the power of contracting itself; whence follows a troublesome suppression of the urine, which must be removed by thrusting a fistulous instrument up the bladder. In order to avoid this, I have always earnestly advis'd, that the women who lie in, after having had a few hours repose, should try to void their urine, though they feel no inclination to make water. During delivery they are sometimes thirsty, and they drink a great deal; after delivery, broths are usually given; whence a quantity of urine is gathered in the bladder.

Some have been so careful of the lying-in woman's repose, that they have considered it as a shocking thing to put clean sheets to the bed before the tenth day

day after delivery^z. Certain it is, that the cold air being let in upon the first days of lying-in, must have done great hurt, especially if it should touch the lower parts of the body. But it should be taken into consideration, that the sheets are defiled by the secundines, which are corrupted by the heat of the body, and produce a very nauseous smell. I remember that I have sometimes visited such lying-in women who had then been for some days in this dirty condition. Whilst they stretched their hands to me from under the bed-clothes, that I might feel their pulses, my nostrils were struck with such a stink, that I was near fainting away, though I do not think myself so nice as to be easily affected by a bad smell. It is obvious that the worst consequences are to be feared, if lying-in women should be obliged to remain for several days together in such a putrified atmosphere. Authentic observations have confirmed that this filth and putrefaction have been hurtful to women who have been brought to bed in hospitals; for a great number of them perished; and the governors of the hospitals began to suspect that the ignorance or negligence of the midwives, was the cause. The bodies of many of the deceased were opened, and their innermost parts were found filled with abscesses. A skilful physician examining all things with attention, found the cause to be, that the ward under that of the women in labour, was filled with wounded persons. His opinion was confirmed, by finding that as the number of wounded persons increased, the mortality amongst the women in labour increased likewise; and that as the former was diminished, so likewise was the latter. Moist air, whether warm or cold, was hurtful; but dry air was beneficial; for it is well known that moist air is favourable to putrefaction, especially if it be warm at the same time. But when the lying-in women were placed in the ward underneath, this mortality was no longer observed,

served, for the air, filled with putrid exhalations, is lighter, and therefore rises higher^a.

From hence it seems proper that the sheets should be more quickly changed, but with great caution, lest cold air should approach the body, or moist and cold sheets be laid on the bed. This may be easily done if the lying-in woman should wear a short shift, which only reaches down to the navel; whilst the rest of the body is covered with a sheet, which is wrapped round for readiness, and is quickly and easily changed. But all this linen is applied, being dry, warm and imbued with the vapour of frankincense, mastix, &c. For women of condition, two beds are prepared exactly contiguous to each other, which, if there should be occasion, may be removed with ease, and without any noise, whilst the feet of the bed are furnished with little wheels, by which it may be rolled in any direction. Whilst these beds are contiguous, the lying-in woman is easily removed from one to the other, and thus the clothes may be easily cleaned. It is scarce credible what ease lying-in women receive from hence, in not being obliged to lie a long time in a dirty condition.

If then they are left in a state of repose, if prattling attendants are kept from them; if the servants about them are all silent; if they lie in a darkish place, where there is but a glimmering light, all things are avoided by which the senses may be violently affected, the delivery is happily effected.

Their food should be soft, liquid extracted from oats, barley, rice, and other things of a like nature; flesh broths not too strong, given several times in the day, but in small quantities each time. They should abstain from meat till the milk-fever is over; then white meats are allowed them by degrees, first in small quantities, which are afterwards prudently increased in proportion as the appetite and digestion mend.

^a *Peu la pratique des accouchm.* liv. 2. chap. 1. sect. 3. pag. 268.

mend. In the mean time, it must always be considered, that women who lie in, are to be nourished; choice is made of light meats easy of digestion; but such a quantity of these should be given, as is sufficient to support the body. Sometimes ill-natured nurses, and sometimes rigid physicians, make lying-in women fast on the first days after delivery; this is hurtful. Upon this subject the reader may consult what has been said in sect. 600, and sect. 601.

A mild, thin and copious drink is recommended, that all the humours of the body may be thin, and may circulate freely. Wine is abstained from on the first days, except weakness makes a certain quantity of it necessary; water is agreeable to those who are used to it; and it is of service as well as gentle emulsions and infusions prepared of emollient herbs. I never knew new beer soft and clear, hurtful to women in labour who have been used to that liquor. Whatever drink is allowed, should always be given a little warm, never quite cold; for that generally occasions gripings, horrors, and a suppression of the evacuations after delivery.

But as the milky serum, as has been said before, is carried to the womb, and afterwards to the breasts, and most of the liquors and aliments allowed lying-in women, especially those who are just delivered, grow sour of their own accord; hence gentle alcalics, and things of an absorbing nature, should be given, from crab's shells, coral, burnt hartshorn, &c. With regard to these, see what has been said in sect. 66, where the method of correcting acid acrimony was treated of.

It was said above, that at the latter end of the time of pregnancy, the great intestines are sometimes so pressed, that hard excrements are gathered in their cavity, and their bulk is sometimes so considerable, that being after delivery carried to the intestinum rectum, or last gut, they are with great difficulty forced out. When delivery approaches, prudent
midwives

midwives generally give a clyster, lest the excrements remaining in the rectum, should obstruct it. Many women void their excrements during the efforts of delivery. If this should happen, it may be deferred for two or three days without danger. But if the belly should remain bound, a clyster may be safely given, but it should be a mild one. Broth or an emollient decoction, with an ounce or two of oil of almonds, and the same quantity of syrup of marsh-mallows, will suffice for this purpose; for the design is only to lubricate the passages, and to soften the excrements that they may come out with the greater ease; nor did I ever know this do any hurt. Some however are of opinion, that costiveness is serviceable to women in labour, and they do not venture during eight days or more to give even a gentle clyster, waiting till the hard excrements may be forced out of themselves; often not without great difficulty, and a violent effort. For they are apprehensive of a looseness, which they look upon as always dangerous, and generally speaking, mortal to women in labour. Hippocrates has told us the following particulars^b: *Si vero uteri ex partu laboraverint, febris levis detinet, interiore autem parte venter accensus est, interdumque ad coxam usque intumescit, dolor etiam imum ventrem & laterum mollitudinem occupat et dejectiones biliosæ sunt & graveolentes, ac, nisi alvus sistatur, derepente perit*: “ But if the wombs should be partly disordered, “ there is a slight fever in the case, the belly is inflamed in its inside, and sometimes swells as far as “ the hip; a pain likewise seizes the lower part of “ the belly, and the soft parts of the sides; the stools “ are bilious, and of a very bad smell; and if the “ looseness be not stopped, the patient quickly dies.” He then recommends various remedies for stopping the looseness. But before in sect. 586, B, where the causes of fevers were treated of; it was observed from

^b De mulier. morb. lib. 1. cap. 55. charter. Tom. VII. pag. 759.

from *Hippocrates*, that there is danger of a fever or a flux, if the body should continue open. And in sect. 792, in the history of the phrenzy, it was likewise said from *Hippocrates* and *Galen*, that costiveness is not properly a symptom of the brain's being disordered, but that disorders of the head are always increased, and made worse by costiveness. It is well known that in child-bed, pains in the head are often troublesome, and that they are sometimes succeeded by deliriums; whence it is plain, that a continued costiveness is bad for women in child-bed. *Hippocrates* ^c himself, in a dangerous suppression of the evacuations after delivery, ordered, *Alvum emolliri, melius autem est clystma injicere*: "That the belly should be softened, but is better to give a clyster." In like manner, *Mauriceau* ^d in a most dangerous disorder of lying-in women; namely, an inflammation of the womb, advises to keep the body open by soft clysters, which have nothing of a sharp, stimulating quality. Whence it is evident, that it is both beneficial and safe, that the belly should be cleansed with a clyster during the time of lying-in.

We need not be under any great apprehensions from frequent going to stool, nor even from an inconsiderable diarrhæa in women who lie in, if it be not attended with other and worse symptoms. *Celeberrimo de Haen* ^e in *batavis puerperis observare aliquoties contigit diarrhæam pro lochiis; pernicioſa hæc in genere credita, tamen plures in vita servat, si vires bene conserventur*: "The celebrated *de Haen*, had frequent opportunities of observing in the Dutch women, a diarrhæa instead of the evacuations after delivery; this is in general thought dangerous, yet it preserves the lives of many, if their strength be carefully preserved." I have observed this both in Dutch women and those of *Vienna*, even when

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^c De mulier. morb. lib. 1. cap. 42. charter. Tom. VII. pag. 754.
^d Traite de malad. de femm. gross. liv. 3. chap. 11. pag. 421.
^e De hæmorrhoid. theses. cap. 5. pag. 76.

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their secundines flowed from them slowly. It was before remarked, that many of the viscera are compressed by the pregnant womb's swelling; and that thus their functions may be obstructed; nor is the jaundice uncommon in pregnant women. It is not therefore to be wondered at, if the viscera being now freed from the pressure of the womb, should force out all that by stool, which had been retained and accumulated during the time of pregnancy. It seems that for this reason, celebrated practitioners, as soon as the disorders that arise from the fatigue of delivery subside, began then to think of cleansing the abdominal viscera. *Hoffman* prepared ^f pills composed of extracted bitters, resinous gums and aloes properly corrected, of which he gave fifteen grains morning and evening, on the second day after delivery; and according as the exigency required, persisted several days in the use of them: *Nam roborando tam intestinorum quum ipsius uteri per extensionem nimiam robore exuti tonum, blande simul stimulando imum ventrem ac intestina a sordibus, ipsum quoque uterum a stagnante, corrupto sanguine repurgat*: “For as well by strengthening the tone of the intestines, as of the womb itself, deprived of its strength by too great stretching, and at the same time by a gentle stimulation, he clears the lower belly and the intestines of excrements; and even clears the womb itself of corrupted blood.” For the same reason *Levret* ^g recommended the continued use of the *Arcanum Duplicatum*, but given in moderate doses; he did not begin to give it till after the milk fever was over. For he rather chose, and that very judiciously, to administer nothing immediately, or in a very short time after delivery, unless there was a pressing necessity for so doing. If any thing should stick fast to the viscera, it will be insensibly dissolved by soft diluents, and afterwards of its own accord, or with a little, gentle

^f Medic. ration. systemat. Tom. IV. sect. 2. cap. 10. pag. 498.

^g L'Art des accouchm. pag. 138.

gentle stimulation, will quit the body, when delivery is happily effected.

But when, the evacuations after delivery being suppressed, the womb inflamed, all things tending to destruction, there come from the womb thin excrements of a nauseous smell, with a great diminution of the strength, death is at hand; hence at the least appearance of a diarrhæa, the women in labour and the by-standers, are so uneasy, and require that such a flux should be immediately stopped; and if the physician should not indulge them, his reputation is lost for ever in case the woman should die. *Hippocrates* has given us a general practical axiom which I cited in sect. 11: *Si qualia purgari deceat, purgentur, tum confert, tum facile ferunt si contra, difficulter*:

“If such things as should be purged away, are purged away, that is beneficial, then they are easily delivered; if it is otherwise, they are delivered with difficulty^h.” Nor does this rule deceive us. For this reason, *Levret*ⁱ has judiciously divided the diarrhæa of women in labour into the critical and the symptomatic. The critical generally begins after the third or fourth day of child-bed; the patient voids yellow or whitish excrements, or excrements of these two colours blended together, which gives her great relief, and is not attended either with a suppression of the evacuations after delivery, or of the urine, but only with a diminution of them: sleep and appetite continue, the pulse is regular, and the abdomen soft. It is observed on the contrary, in the symptomatic diarrhæa, that it begins more quickly, that slimy and blackish excrements are immediately voided, which are at last changed into grey and serous matter; sometimes into purulent and bloody matter; the evacuations after delivery are suppressed, the abdomen swells, the strength is diminished, the appetite is destroyed, sleep is banished, the quantity of

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the

^h Aphor. 25. sect. 1.

ⁱ L'Art des accouchm. pag. 137.

the urine is diminished, and it leaves a sediment of the colour of brick-dust; there is a thirst, and the patient feels an internal heat, whilst the external surface of the body is cold.

The rules of art forbid us to stop such an internal diarrhæa, to keep back the symptomatical, seems not to be very safe, as putrefaction would by that means be retained in the body. The medical indication here requires, that we should correct the putrefaction which is begun with efficacious antiseptics, and restore the sinking strength. But if any putrefaction, being mixed with the humours, should run through the vessels, and a weakening flux should come on, this will come out of the body more safely by urine and sweats. *Hippocrates*^k after he had advised to relax the belly above all things with a clyster, in a suppression of the evacuations after delivery, as has been said, adds: *Quod si facile vomverit, etiam vomitus ciendus, satius autem urinam ciere & sudorem provocare*: “If she should easily vomit, her vomiting should be promoted. But it is better to promote urine and perspiration.” Gentle diluents which are usually given in great quantities to women in child-bed, supply both the urine and sweat with a vehicle; however such sweats are not desirable, as are forced out by the intense heat of a chamber; the heat of clothes laid on, or warm sweating draughts; for those would be hurtful. They are then only of service when they are promoted by the kindly heat of the bed and diluted humours. For thus the weariness of the whole body, occasioned by the fatigue of delivery, is removed, and the milk fever is usually carried off in the same manner. See what has been said in sect. 73, and the following sections, concerning the feverish sweat.

Hence the reason is obvious, why the chief authors who have written upon the art of midwifery, and

^k De mulier. morb. lib. 1. cap. 42. charter. Tom. VII. pag. 754.

and the disorders of child-bed, speak so highly of those gentle sweats at that time; having perceived such great advantages rise from them, and on the contrary, so many disorders if they should be indiscreetly suppressed. For there generally follow fluxes, attended with severe gripings, grievous pains in the limbs, a suppression of the evacuations after delivery, violent fevers; all which disorders are happily surmounted if the sweats return, being excited by the warmth of the bed, and diluting broths. Nay Sydenham, who as it is well known, had no such great opinion of the warmth of the bed and sweating, yet in speaking of women in labour, says, with his usual candour: *Præterquam enim, quod ista, qua in læto fruuntur, quies a malis jam toties commemoratis eas immunes præstet, non in interruptus læti calor spiritus pariter reficit, tum a pariendi doloribus, tum ab evacuationibus in hoc casu solennibus, exhaustos fractosque; quinimo et naturæ suppetias fert atque omnes quas gestationis tempore mulier congefferat, cruditates digerit & a molitur*: “ For besides that that repose which they enjoy in bed, preserves them from the disorders so often enumerated; the uninterrupted warmth of the bed restores their spirits in like manner, exhausted and broken, as well by the pains of child-bearing, as by the evacuations usual in this case; it likewise contributes to support nature, and digests and carries off all the crudities which the woman had contracted during the time of her pregnancy.”

If it should appear from the symptoms before enumerated, that the womb is inflamed, all the circumstances which have been mentioned in the history of an inflammation, and of inflammatory disorders, will take place. In the following paragraph, the method of bleeding lying-in women, shall be treated of.

The most gentle, specific, opening remedies from moderate cordials and uterine medicines, are recommended for restoring the suppressed evacuations after

delivery. Such remedies as promote the evacuations of the lochia are generally called *Aristolochia*, and these have been enumerated by *Boerhaave*^m. But they are divided into two classes, the former are called deriving, the latter opening; we shall now treat of the latter, and at the same time of such things as are applied both internally and externally. If we run over a catalogue of these remedies, we shall find that they are all hot and stimulating, but that some of them are more, some less powerful. Thus, for example, mugwort, motherwort and germander, are milder than savine, savory, &c. the same holds good of distilled oils: thus the oil of cinnamon and of cloves, are very strong; the oils of mace and baulm, though very fragrant, are much milder. These cordials are beneficial in case of weakness and languor. The same thing is true of the remedies against diseases of the womb, which having increased, the motion of the humours press the vessels of the womb, and open such as are shut. Hence these remedies are called both *Emmenagoga* and *Aristolochichæ*; concerning which, see what has been said in sect. 1291.

But as an inflammation of the womb is always to be apprehended in lying-in women, if the evacuations after delivery, which should be unseasonably suppressed, prudence advises, that only the most gentle specific remedies, whether uterine or cordial, should be used: but this is done by chusing out the mildest of these; or if the stronger are to be administered, a small quantity of these should be given, infused in a large quantity of water; whilst at the same time, the vessels of the womb are disposed in such a manner by fomentations, vapours, &c. that they may with the more ease yield to the force of the humours, which is somewhat increased: the greatest caution of all is required, with regard to those that are easily moved, or are subject to fits of the mother. Hence *Sydenham*ⁿ has

^m Institut. Boerhæv. sect. 1226. pag. 537.

ⁿ In dissertat. epistolari. pag. 533, & seq.

has very prudently advised phyficians not to continue long in the ufe of thofe remedies that are called uterine: *Sed exhibitis aliquamdiu remediis, quæ in hoc cafu cum fuccellu adhiberi folet, fi volis ea non refpondeant, ab iis temperandum eft; cum neque fortiora hic locum habeant, neque in mitiorum ufu perfeverare debeamus, propter adtritaf & fere proflratas puerperarum vires:* “ But
 “ having for a time adminiftered remedies, which
 “ are in this cafe generally given with fuccell, if they
 “ fhould not fucceed to our wifh, we fhould abfltain
 “ from them; as neither the flronger can here have
 “ place; and we fhould not perfift in the ufe of mild
 “ remedies, on account of the worn and almoft ex-
 “ haufled flrength of the lying in women.” He
 once, and but once only, prefcribed laudanum, either
 by itfelf or mixed with uterine remedies, in order to
 compofe the difordered fpirits: *Sedulo enim animad-
 vertendum eft quod fi telo hoc fimul miffo, fcopum non at-
 tingamus nec fequantur lochia, opium nullo modo eft repe-
 tendum, ut in aliis cafibus fieri folet & debet:* “ For we
 “ are carefully to obferve, that if by fhooting this
 “ arrow, we do not hit the mark, and the lochia
 “ fhould not come out, we fhould not have recourfe
 “ to opium a fecond time, as in other cafes we
 “ fhould.” He has paffed the fame judgment upon
 the ufe of clyflers, nor would he have them repeated
 if the fecundines do not come out after one injection.
 But in that cafe, *Rem omnem tempori, medicorum facile
 principi & ac coryphæo committendam cenfuit:* “ He
 “ was of opinion that the whole cure fhould be com-
 “ mitted to time, the prince and coriphæus of phyfi-
 “ cians. *Imprimis ideo, cum fingulo quoque die curati-
 onis negotium magis magisque, extra aleam ponatur & fi
 ægra vigefimum diem fuperaverit, jam fere in vado fit:*
 “ Chiefly becaufe the bufinefs of cure becomes every
 “ day lefs and lefs doubtful; and if the patient paffes
 “ the twentieth day, fhe is almoft out of danger.

I have constantly followed this method, nor did I
 ever repent it. In a lying-in woman whole evacua-

tions were very scanty, there remained a troublesome pain in the outermost part of the abdomen, which did not yield to gentle remedies, administered in order to promote the evacuations. I applied the softest fomentations both by day and night. I applied plaisters of the same nature after she had risen from child-bed; six weeks after delivery, a quantity of blood flowed from the womb, with some relief of her pain; and she afterwards lived healthy and fruitful.

The other class of Aristolochic remedies^o, contains those things that direct to the womb with this effect, that the humours should be conducted in a greater quantity, and with greater violence towards the lower branches of the aorta. But this is effected either by diminishing the resistance of the inferior vessels by baths, fomentations, cupping-glasses, aromatic plaisters, or by increasing the circulation of the humours in the lower parts by frictions; which end is likewise promoted by bleeding in the foot. But it should be considered, that except the closed vessels of the womb can be opened by this increase of motion, all the bad symptoms are increased; whence likewise it is evident that prudence is required in the use of them. Upon this subject, see what has been said in the chapter upon obstructions in sect. 134, 135.

For this reason *Manningham*^p, *Si suppressis lochiis inflammetur uterus, e brachio potius quam e pede, mittatur sanguis*: “ If upon the suppression of the evacuations after delivery the womb should be inflamed, the patient should rather be bled in the arm than the foot.” For the motion of the blood through the lower vessels being accelerated, the inflamed womb will suffer the greater violence. *Hoffman*^q indeed has laid it down as a rule, that if the evacuations go on, the best way would be to bleed

• Institut. Boerhaave, sect. 1226. No. 1. pag. 537.

^p Art. obstetric. compend. pag 87. ^q Medecin. systemat. ration. Tom. IV, sect. 2. cap. 10. pag. 517.

bleed in the lower parts, after bathing the feet. He acknowledges however that he had known some examples when, during the evacuations, a purple fever, attended with the worst symptoms, had seized the patient, and that bleeding in the arm had been of great service. He at the same time relates a case^r of a lying-in woman, whose evacuations after delivery had been suppressed, by her being exposed to the cold air, and her being seized by a sudden fright occasioned by a fire. A pleurisy soon followed; and upon her being bled in the leg, the evacuations did not return, nor even after the second bleeding in the arm. But, *Sudore per universum corpus per viginti horas profuse manante, & alvo clystere molliente subducto, demum rursus prodierunt uteri purgamenta & ægra ex ancipiti est levata*: “The sweat running copiously from her whole body during four and twenty hours; and a softening clyster being given her, the evacuations of the womb returned, and the patient recovered.” At the same time, it is evident from hence, that the reiterated bleedings prevented her from being suffocated by a pleurisy, but that the doubtful disorder was overcome by a critical sweat.

But though, by bleeding in the foot, the inferior arteries be diminished, and so in them the celerity be increased; yet for the same reason the force and the quantity are kept from the womb, at least in part. For whilst the motion through the external iliac artery is accelerated, the force is diminished through the internal iliac of the same side, which gives the chief branches to the womb. But the chief hope of cure seems to rise from the relaxation of the close-bound vessels of the womb: for in the case mentioned awhile ago, the vessels of the skin and of the womb were bound by the coldness of the air and by terror; and whilst a copious sweat flowed through the relaxed and open vessels of the skin, in a short time

^r Ibid. pag. 516.

time after, the vessels of the womb being opened, restored the necessary evacuations.

From hence it appears why local opening remedies are recommended, but especially all things of a soft nature, which have been treated of in § 1291. for we should beware of things that irritate. For this reason those oblong medicines that are thrust up the womb, called pessaries, and those compounds of honey, salt, and purging powders, called suppositories, are scarce ever made use of: the former are put into the womb, the latter into the anus. But as suppositories are put into the anus, that by their bulk or stimulating quality, or by both together, they may promote stool, gentle clysters are thought better for women who lie in, as they promote stool, and at the same time soften the hard excrements, lubricate the intestines, and cherish the neighbouring womb, whilst they remain in the rectum intestinum, or strait gut.

But though the pessaria and suppositories may be prepared in different ways, they are, however, generally speaking, prepared of honey. Thus *Hippocrates*^s describes them: *Pessos autem subdititios, si valentes desideras, sic conficito. In mel semicoctum ex medicamentis apposititiis præscriptis immitte, quæ educere possunt, & quum immiseris, balanos ad eorum instar, qui in sedem immittuntur, efformato, illosque longos & tenues facito. Deinde mulieri supinæ, in lectulum altius a pedibus instratum reclinatæ, balanum apponito, & panniculo illigatum, aut alia re consimili, calefacito, dum colliquescat. Quod si debiliorem balanum supponere velis, in linteolum obligato:* “ Make the oblong medicines “ which are thrust up the womb thus, if you would “ have efficacious. Into half-boil’d honey put such “ prescribed medicines as may be able to draw; and “ when you have put them in, form suppositories “ like those which are put up the fundament, and “ make

^s Libr. de locis in homine, cap. ultimo. Charter Tom. VII. pag. 377.

“ make them long and thin. Then apply the sup-
 “ pository to the woman whilst she lies supine, re-
 “ clined upon a bed raised high towards the feet, and
 “ warm it, being fastened to a little rag, or some-
 “ thing of the kind, till it melts: but if you have a
 “ mind to apply a weaker suppository, bind it to a
 “ pledget.” The use of suppositories seems to have
 been very frequent with the antient philosophers,
 as in the treatise de De Natura Muliebri, and the
 treatise De Mulierum morbis, many sorts of suppo-
 sitories are described, of which some contain remedies
 sufficiently strong. They are by surgeons applied
 with a good effect, in order to cure the diseases of
 the vagina; but it appears to be very doubtful whe-
 ther recourse can be had to them with safety in a
 suppression of the evacuations, after delivery. For
 the mouth of the womb and the vagina itself had
 suffered a great deal during the time of delivery:
 hence they can easily be irritated, which seems by all
 means to be avoided. I will own ingenuously, that
 I never made use of medicines of this kind, in order
 to promote the evacuations after delivery.

S E C T. MCCCXXXII.

BLEEDING should not slightly, nor
 without the most urgent necessity, be had
 recourse to.

What the lochia are, what end they answer,
 how their colour changes, how they are diminished
 in quantity, has been said in the preceding sections.
 If all these things are properly considered, it will ap-
 pear evident that bleeding is seldom required in wo-
 men in labour, and that it hurts them often, by wea-
 kening them; and that therefore recourse should not
 be had to it, except where indispensibly necessary.

Many

Many seem to be of opinion, that the blood which is lost after delivery is of a vitiated nature, and, generally speaking, glad if lying-in women rise from childbed weak, pale, and exhausted; wherefore if they suspect that there has not flowed a sufficient quantity of blood, they by bleeding let out that superfluous blood which they think burthensome to the body. It is evident from what has been said, that the quantity of the secundines varies very much in different women, who notwithstanding go happily through their time: it is known that such lying-in women as give suck to their children, have more inconsiderable evacuation after delivery than others, and that they cease sooner. It is likewise certain that upon the third or fourth day of child-bed, something purulent comes out, either not stained at all, or stained with but very little blood, and that even in the most healthy women; then there follows the milk-fever, which is usually carried off by a gentle sweat, the milk having flowed to the breasts. At this time they think the evacuations after delivery suppressed, and so they have often recourse to bleeding, whilst they look upon that as morbid which is in the course of nature, as has been more fully treated of before. Sometimes slight pains are at this time felt about the womb, which may be cured easily enough by soft fomentations: these pains are mistaken for an inflammation of the womb, and are thought to require expeditious and reiterated bleeding. What symptoms prove an inflammation of the womb to be at hand, has been shewn in sect. 1329, and in this case no body can doubt that bleeding is beneficial. Thus *Aetius*[†] gives us the following prudent advice; *Ast ubi vehementior inflammatio infestaverit, si neque ætas neque habitus, neque anni tempus obstiterit, neque inflammatio post abortum, aut immensam sanguinas vacationem, supervenerit, cubiti vena secanda est, ac sanguis pro virium ratione educendus, licebitque*

† Lib. 16. cap. 85. pag. 162.

que in secunda quidem venam incidere, in tertia vero sanguinis missionem repetere: “ But when a violent inflammation attacks the patient, if neither her age, her habit of body, or the season of the year, are against it, and an inflammation after miscarriage; or after a great evacuation of blood should not come on, the patient should be bled in the arm, and blood should be drawn from her, in proportion to her strength; and it will be proper in the second to bleed, and in the third to reiterate bleeding.”

Aetius has not therefore advised bleeding, except with caution, and that only when there was a violent inflammation of the womb in the case. It is not therefore advisable to bleed rashly upon every trifling complaint of women that lie in; and care should be taken lest the natural diminution of the lochia should be looked upon as a morbid suppression.

The celebrated *Hoffman*^u, who was an eye-witness of the case, has left us an account of the sad effect of imprudently several times bleeding a woman of quality, and of a vigorous constitution, whilst in labour. A painful swelling, caused by the rough handling of an unskilful midwife, seized on the vagina and the internal neck of the womb on the second day after delivery; the symptoms growing worse, and the evacuations not continuing properly, a fever came on. The king's physician being called, bled her in the arm, and in seven days time bled her six times, either in the arm or the foot. At the last bleeding her eyes began to be clouded, so that she wanted a candle in the brightest day-light, and soon after a mortal weakness followed. On the next day, the corpse being opened, in the whole system of vessels there scarce remained a few spoonfuls of blood. Whence *Hoffman* concludes, *Medicos plures in eo delinquere, quod in inflammatoriis puerperarum affectibus sanguinis missionem repudient omnem: hic in excessu peccatam fuit graviter, sed medium tenere beati:* “ That
“ many

^u Medic. ration. systemat. Tom. IV. sect. 2. cap. 10. p. 520.

“ many physicians are guilty of an error in rejecting
 “ all bleeding in the inflammatory disorders of wo-
 “ men : in the present case a grievous excess was
 “ committed ; but the wise steer a middle course.”

It does not seem surprising that death should be occasioned by so excessive a loss of blood ; but *Sydenham* * informs us, that even by once bleeding rashly, a woman in labour may lose her life. An honourable and virtuous matron was immediately after delivery seized with hysterical fits, and the evacuations after delivery failed entirely. He tried his method, but without success : he therefore chose to leave the cure to time, visiting her every day, and he did not perceive any increase of the bad symptoms. Thus by delays he protracted the disease to the 14th day. Then the women who were with the husband, advised, that his wife should be without delay bled in the foot ; *Quo facto, paroxysmi hysterici adeo invalescebant, ut intra paucas horas spasmi accederent, & non ita diu postea, ærumnarum requies mors :* “ Which being done, the hysterical fits gained ground
 “ to such a degree, that within a few hours convulsive motions came on, and soon after death,
 “ the period of all evils.” *Levret* † has seen many women in labour perish, from whom much blood had been drawn, nay there did not even one escape, whilst this was attempted, either to ward off or to cure a suppuration of the womb, or a transferring of the milk to a new place. This has been treated of in sect. 1329.

It is therefore evident that women in labour should not be too readily bled, except an urgent necessity requires such an evacuation. In the case ‡, of which I have already made mention ; when, on account of a strong constriction of the abdomen, the evacuations after delivery being suppressed, an intolerable pain in the head followed, with other bad symptoms,
 a wo-

* Dissertat. epistol. pag. 535. † L'art. des accouchm. pag. 167.
 ‡ Peu la pratique des accouch. pag. 526.

a woman was bled thrice, without receiving any relief: but after the bandage was loosed, her evacuations returned, and all the bad symptoms vanished.

Notice is here to be taken, that we treat in this place only of those diseases of child-bed which spring from delivery, and its consequences, as their cause. For a woman in labour may be attacked by another disease during her child-bed, and that requires its peculiar cure. *Sydenham*^a has observed, that sometimes fever, which follows a suppression of the evacuations after delivery, passes into the class of epidemical fevers, which at that time are rife; and then requires the same cure with those fevers, the condition of the patient being always taken into consideration. I before remarked in sect. 890. that I would have recourse had to bleeding, when the women in labour are seized with a pleurisy, though the evacuations after delivery continue. For the evacuations are not always stopped whilst such an inflammatory disorder comes on during child-bed. Thus *La Motte*^b saw, after a very laborious delivery, an acute pleurisy on the fourth day after the patient was brought to bed, not at all relieved by copious sweats, as was hoped. But such a severe disorder did not so much as diminish the evacuations after delivery; and as he had been sent for a little of the latest, he was obliged to bleed four times, in order to quell the fury of the disease; there followed however a purulent imposthume, which she got rid of, though quite exhausted and worn away. She was by slow degrees restored to her health by the use of milk, and she recovered entirely. When upon the eighth day after delivery a woman had been seized with a severe pain in the side, *Tulpius*, as the pain raged continually with reiterated attacks, was obliged to bleed her three times in the foot, and five times
in

^a Dissertat. epistol. pag. 532.

^b Traite complet de chirurg. Tom I. observat. 45. pag. 245.

256 Of difficult DELIVERIES. Sect. 1333
in the arm^c. She not only bore this excessive loss
of blood, but she was likewise obliged to undergo
a violent flux before the disease was entirely dispel-
led.

S E C T. MCCCXXXIII

N O R are the symptoms to be treated in
such a manner as if they were acute dis-
orders of their kind (1329).

This cannot be sufficiently inculcated, as so many
errors in practice happen in this respect. It has often
been said already, that the womb has great influence
over the other parts of the body. Thus, for exam-
ple, there often arise violent head-achs, which de-
ceive the superficial as though they were inflamma-
tions of the membranes, which cover the brain and
the cerebellum. In the case above related, when
there was a violent head-ach, occasioned by the ab-
domen's being too hard bound, when the eyes spark-
led, &c. who that did not know the cause would not
have thought that there was a phrenzy coming on.
Bleeding is often attended with no sort of advantage.
When the bandage is loosed, all the bad symptoms
cease. This should be chiefly attended to in women
of a delicate constitution, and in such as are subject
to hysterical complaints. I have known a lying-in
woman of such a constitution have very severe pains
in the belly, whilst a lump of clotted blood that
should have come out was detained a while in the
orifice of the womb. A little after, the pain in the
belly having ceased, she complained that she felt in
her head pains like those which she felt in her belly.
A quarter of an hour after she voided a thin, aqueous
urine, and the clotted lump was forced out by this
effort to make water: immediately the pains in the
head

head cease, and a quiet sleep for some hours follows; upon waking, she joyfully tells her mother, who was very uneasy about her, that she was perfectly recovered. I have seen many similar cases, which have convinced me that the several symptoms which attend lying-in, and which often resemble acute disorders, do not require to be treated like an inflammation.

S E C T. MCCCCXXXIV.

TH E milk being carried to the breasts, there often follows a stagnation of it, a coagulation, an inflammatory pain, suppuration, a schirrous tumour, or cancer.

The milk intended as food for the new-born child, is often in the breasts at the time of pregnancy; and sometimes a considerable quantity drops out, as has been observed before. Thus the receptacle of milk is already prepared in pregnant women, that the child may find nourishment after delivery: for though I have seen children suck immediately after delivery, generally speaking, however, the breasts begin to grow flaccid after delivery, nor are they lightened till the second, the third, or the fourth day, and sometimes later. The women who lie in feel slight standings on end of the hair, as it were, creeping under the skin, they become uneasy, their sleep is disturbed, they are generally feverish, they grow warm. Then the breasts begin to be stretched tighter, they swell more and more, the arms move with some uneasiness; then the milk is said to be carried to the breasts: if this should be effected with moderate force, all those inconveniences shortly cease, chiefly if the child should suck its mother; and so the too great stretching of the breasts by the gathered milk be avoided. That first milk which is gathered in

The breasts after delivery, is thin and serous, and very beneficial to children just born, as it yields a thin nourishment, cleanses the ventricle and intestines of filth, and at the same time gently relaxes the belly.

Sometimes the milk is suddenly hurried into the breasts, and in a few hours greatly distends them. We have often spoke of the connection which is observed between the womb and the breasts. Anatomists have wrote that the internal vein of the breast communicates with the epigastric vein, or vein of the fore part of the lowermost belly, by an anastomosis or mutual opening into each other; and in the body of a woman just before delivered, these vessels have been seen to equal a writing pen^d. *Hippocrates* seems to intimate^e that sometimes the humours are forced up, and not only distend the breasts, but also the vessels of the encephalon, the brains contents, where he expresses himself thus: *Quibus mulieribus sanguis in mammis colligitur, maniam significat*: “In women
“in whose breasts blood is gathered, madness is signified thereby.” In some women the milk easily comes out of their breasts, through the extremities of the lacteal ducts, and that of its own accord; so that I have sometimes seen linen cloths which have been applied to the breasts, often require to be changed, as they were all over wet with the serous milk. In such, stagnation and coagulation rarely have place. Suction is generally required to bring the milk out, when the nipples, consisting of membranes that may be folded over one another: the having sunk down, wrap up the little lacteal tubes and obstruct the easy passage of the milk^f. Whence the pressure of the atmosphere being diminished by suction, the little lacteal tubes being at the same time by the stretching of the nipple, placed in a proper position.

^d Hemsterh, *messis aureæ*, pag. 138. ^e Aphor. 40. sect. 1.
 Charter Tom. IX. pag. 219. ^f Winslow *exposit. anatom.*
traite de la poitrine, No. 19. pag. 586.

position, the milk flows out, and the stretching of the breasts is diminished. But it was requisite that the milk should not always run out, but that being gathered in the breasts, it should there remain till the child had occasion for the breasts. Therefore the lacteal ducts, the collection of which forms the glandulous substance of the breast, at their beginning are narrow, in the middle of their extent wider, and then again become narrow near the nipple, and near its circular basis constitute a sort of a channel of communication, from which arise the lacteal tubes that are distributed through the nipple, and near its orifice gape with little mouths^g. Whence it manifestly appears, that the effect of this whole apparatus is, that the milk may be gathered, and may stay some time in the breasts. The *membrana adiposa* unites itself with this whole glandulous substance of the breasts, whose little pores sustain numerous blood vessels and lymphatic vessels, as well as the lacteal ducts and bunches of glands. This whole apparatus is contained in a membrane, which seems to be a continuation of the porous membrane: that part of it which constitutes the bottom or basis is thicker, and sticks to the pectoral muscle underneath; the remainder of it is thinner, and grows firmly to the skin^h.

From whence it is evident, that the structure and situation of the breasts, may cause them to be greatly distended; this was requisite in order to gather the milk; but as soon as the distending force is ever so little diminished, they are strongly contracted by their own elasticity, and they throw the milk through the tubes, which are open in the breasts, to the distance of some feet. Hence whilst the children suck the full breasts, the nurses perceive some degree of motion in the whole breast, and they are accustomed to say that the breasts have fallen, and then the milk spurts out with great violence; and in such

S 2

a quantity,

^g Ibid. and No. 13. pag. 585.^h Ibid. No. 11, 12.

a quantity, that the child cannot swallow it, wherefore it forsakes the breast; or careful nurses, as soon as they perceive that motion beginning in the breast, immediately take the nipple from the mouth of the child, and give it back again as soon as the first violence of the spurting milk has ceased. This generally happens whilst the breasts are firm and solid, scarce ever in such as hang down and are flaccid.

But the milk if it should stagnate, let it be ever so good, it throws upwards a white, thick and fatty creamⁱ; the milk stays below, being skinned, of a bluish colour, transparent and thin. If with the milk, be mixed that which is called the rennet of milk, which is prepared of the juice of the stomach of animals that chew the cud, it turns into an equal, coagulated mass, capable of being cut, which soon changes into serum, and becomes curdy, and of the nature of cheese. If an acid is mixed with it, it immediately becomes clotted and coagulates, the remainder of the milk continuing fluid^k. But the pure milk which is left to itself, grows sour, especially in warm air, and then it becomes in like manner clotted as when the acid is poured upon the milk. But the milk grows more and more yellow from the alkaline fixed salt which is added to it, and this according as more alkaline salt is mixed with it; and at last that yellow colour is generally changed into a deep red; but at the same time the milk is coagulated, though not so strongly as when this is caused by the mixture of the acid^l. But, *Febricitanti valide animali, lactantis prolem, lac corrumpitur in uberibus, fitque tunc ex candidissimo flavescens, ex dulci salsum, ex crassulo saniosum tenue, interim crassamento coagulato in mammis relicto, ex inodoro sub foetidulum, infanti horrendum et fastiditum. In coagulatione ergo lactis, una cum febris calida & colore flavescente, non licet medico cogitare de causa coagulante acida, sed de calore nimio, & forte alcalif-*

cente

ⁱ Herm. Boerh. chem. Tom. II. pag. 297.
301.

Ibid. pag. 302.

^k Ibid. pag.

cente potius coagulatione. Quin forte centies medici observant, lac coagulari sic a febre, ubi ne semel id vident factum ab acido: “ When an animal that gives suck
 “ to its young is very feverish, the milk is corrupted
 “ in the dugs, and then it becomes yellow, though
 “ extremely white before; salt of sweet, of thick
 “ corrupt and thin, and having in the mean time
 “ left the sediment in the breasts, it becomes of a
 “ nauseous smell, though before of no smell; disgusting and filthy to the child. Therefore in the
 “ coagulation of milk, it being attended with a hot
 “ fever and of a yellowish colour, the physician
 “ should not think of the coagulating acid, but of
 “ the too great heat, and perhaps rather of the alkaline coagulation. Nay perhaps a hundred physicians observe, that the milk is coagulated by a
 “ fever when they do not see it once done by an
 “ acid.”

For whatever cause therefore the milk stagnates in the breasts, its degeneracy and coagulation is to be feared; a thin serum then usually flows from the nipples, the breast remaining equally stretched, equally in pain, and equally tumid, whilst all the clotted blood is retained. The cold air suddenly reaching the breasts, has been observed to be a frequent cause of this disorder^m; wherefore those who attend women in labour, apply warm towels to their breasts, in order to guard against the ill effects of cold.

Is there any probability that the ill structure of the chest, and the difficult return of the blood of the veins from the breasts, contributes to this? In those women who do not give suck to their children, all the milk with which the breasts are filled, should again return into the blood by the veins: but if that return should prove difficult, the milk will stagnate in the breasts, and a coagulation of the milk is to be apprehended. Was it this *Hippocrates* had in view

S 3

when

^m Levret l'Art des accouchm. pag. 155.

when he said ⁿ, *Quibus virginibus orthopnæa contingit, illis uterum gerentibus mammæ suppurantur*: “ A sup-
 “ puration in the breasts generally happens to such
 “ women as during their virginity, were troubled
 “ with a difficulty of breathing.”

If therefore the milk being carried to the breasts should stagnate, there will be a separation of the parts which the milk consists of. The fat cream will quit it, which will grow stale during a feverish heat; the curdy part, though it first turns sour, may putrify in the progress of the disease; for it then partakes more of the animal nature. For if the coagulation of milk is pressed with great force under a linen-cloth, so that all the serum be separated from it, it becomes fat cheese, consisting of the cream of milk and cheese, properly so called: this in time becomes very strong, not acid, but rather of an alkaline nature. But if, the cream being first taken off, cheese is made of the coagulated milk, it grows as hard as horn, and being brought near the fire, grows perfectly supple like horn; it is scorched, it is burnt, it stinks^o.

Whence the reason is plain, why when the milk stagnates, coagulates and degenerates in the breasts, there follows an inflammation of them, and all its consequences are to be apprehended if it cannot be dispelled.

S E C T. MCCCXXXV.

IT is known by alternate, hot and cold fits; a fever, and the symptoms of an inflammation in its beginnings.

An inflammation of the breasts often accompanies a milk fever, which begins with alternate hot and cold fits, as has been said. It sometimes begins later,

ⁿ Coacar. prænot. No. 549. charter. Tom. VIII. pag. 884.

^o Herm. Boerhaave chem. Tom. II. pag. 301.

ter, whilst the stagnating blood, from what cause soever it happens, begins to degenerate in the breasts. The first generally happens to those women in labour, whose milk being gathered in their breasts, should be driven back; the latter oftener happens in those that give suck. But as there is the greater hope of dispelling the disorder, the sooner a proper remedy is applied; for this reason, these symptoms of a beginning inflammation should be attended to. A swelling, pain, heat, redness, together with a fever, are the chief; concerning these, see what has been said in sect. 382, where the symptoms of inflammation were treated of.

S E C T. MCCCXXXVI.

IT is cured, 1. By gentle alcalics. 2. By the mildest diluents. 3. By external discutient remedies quickly applied.

1. As the milk usually grows sour of its own accord, and whilst it grows sour begins to grow clotty, hence alkaline humours are recommended, concerning which, the *Materia Medica* may be consulted at this article, as well as what has been said in sect. 66, concerning the method of correcting acid acrimony. However the gentlest are made choice of, and chiefly those which are called the absorbers of acids, which have no acrimony. The dried bones of fishes, as the jaw-bones of a pike, are greatly praised by some. Fixed alkaline salts, though they certainly have the power of counteracting acids, and make thin what has been united by the acid ^p, and are consequently recommended for dissolving coagulated milk, are notwithstanding, seldom given but in a sparing dose, and copiously diluted with water; as all mild and gentle remedies suit women in labour.

S 4

Besides,

Besides, experiments have taught us^a: *Non esse verum, quod ubique asseritur, resolvi illud coactum rursus in antiquum liquidum, & resolvere alcalia, quæ ab acidis erant densata*: “ That it is not true which is generally asserted, that that is dissolved being forced again into its antient fluid, and that it dissolves alcalics which were condensed by acids.” For it appeared from what was said in sect. 1334, that the milk becomes clotted by the alkaline salt which is mixed with it, though it is not so strongly coagulated as by the acids that are poured in. It moreover appeared, that the milk is much more frequently made thick in the breasts by a fever and by heat, than by a coagulating acid.

2. These answer every end; they lenify, they soften, and by moistening what is condensed, prepare it for dissolution, and they are made use of in all inflammatory disorders. Many such prescriptions are to be met with in the *Materia Medica*. A moist regimen, and a copious, thin and aqueous drink, conduce to this.

3. As the hands have an easy access, hence all men have hoped for the greater benefit from the external application of remedies. For whilst these are quickly applied at the beginning of inflammation, there is great hope of gently dissipating the inflammation. But is best always to use the gentlest remedies, that if the inflammation cannot be dispelled, all things may be prepared for a kindly suppuration. In the very beginning of the disease, *Moschion*^r applied water mixed with vinegar, for he imagined that there was an astringent force in the vinegar; at present all men are acquainted with the dissolving force of vinegar. For he applied soft sponges wet with vinegar, mixed with water, or bread soaked with the same, with pounded dates. These he had recourse to; *Lacte irruente, cum tensione, gravitate dolore; & cum*
fervore:

^a Ibid. pag. 303,
& 60.

^r Spach, gynæc. pag. 6. No. 58,

fervore: “ The milk rushing to the breasts, with a stretching, a weight, a pain ; and also with heat.” But if the heat of the breasts should be increased, he would have such things applied as are capable of relaxing ; that is to say, fomentations of oil and warm water. The observations of the celebrated *Benevoli*, confirmed by *Nannoni*^s, shew the admirable use of vinegar diluted with water, not only in the beginning of an inflammation of the breasts, but also when the disorder is far advanced. Some cases are there related, which shew the excellency of this remedy. For according as the inflammation was the more vehement, the vinegar was the more diluted, lest it should hurt by irritating. But if the symptoms of its subsiding, did not appear, but the heat, pain and swelling were increased in the breast, and the pulse became more quick ; he laid aside the vinegar and water, and fomented it only with warm water, as also with ointments and plaisters, that he might promote suppuration, having lost all hopes of dispelling the inflammation.

Many have used the gentlest remedies alone. Thus *Mauriceau*^t applied a soft poultice made of crumbs of bread boiled in milk, adding to it afterwards oil of almonds, and the yolks of a few eggs. Upon this poultice he put patches moistened with vinegar and water. He expected great benefit from a head of red cabbage, boiled in water till quite soft ; which being then pounded in a mortar, was strained through a sieve, that it might be all equal ; and then there was added a little honey and oil of chamomile, prepared by infusion. *Levret*^u attempts the cure by soft medicines, by anodynes, by medicines that dissolve gently, and by external applications ; afterwards when the breast stretched before began to be relaxed, he then directed that dissolving remedies alone

^s Trattato delle malattie delle mammelle, pag. 26, & seq.

^t Traite des malad. des femm. gross. &c. liv. 3. chap. 16. pag.

^u L'Art des accouchm. pag. 156.

alone should be used ; he made use of a poultice of bread and wine boiled together, sea water strengthened with red wine, good urine, alkaline salt, and sal ammoniac dissolved in water.

I took care to have a breast swelled with gathered milk, fomented with Venetian soap dissolved in milk and water ; twice or thrice a day I exposed it to the steam of warm water ; then if the pain ceased for a-while, I had it gently rubbed, and scarce had I occasion for any thing else if there was any prospect of dispelling the inflammation.

At this article we meet with a poultice in the *Materia Medica*, which is partly composed of softening ingredients, partly of aromatic, discutient remedies, with the addition of Venetian soap likewise. But as all these ingredients were boiled in milk, much is lost of the volatile stimulating quality of the aromatics, and it is chiefly useful when the breasts are crammed with milk, there being at the same time a slight inflammation. But when there is a great heat, redness and pain ; then the preference is given to all the most gentle remedies.

S E C T. MCCCXXXVII.

IF at last it tends to an exulceration after a crisis, no time should be lost in opening, cleansing and consolidating ; of which we shall speak in treating of what relates to surgery.

The symptoms which demonstrate that the inflammation cannot be dispelled, but tends to suppuration, have been spoken of already in sect. 386. Therefore when this is certain, the mildest things alone are serviceable, together with things of a fattish nature. I have advised the flour of oats alone boiled in milk, with the addition of oil of flax, to be applied to women of the poorer sort in the form of a poultice, in

order to avoid expence; and this had an excellent effect. But how an abscess which follows an inflammation that cannot be dispelled, should be cured, has been said in sect. 402, and those that follow. Hence there remains only to remark upon certain peculiarities that have been observed in suppurated breasts.

It was before said, that the substance of the breasts consists partly of the porous tunic, partly of the glandular substance; whence *Levret* * has made a just distinction, having given us to understand that sometimes the porous tunic alone may be stuffed; which rarely happens; that often the same disorder obtains in the glandular part; but that most commonly both these parts are affected at the same time.

If only the porous tunic being inflamed, should tend to an abscess, the breast swells a great deal, but with an uniform and equal swelling; so that its convex figure is not changed, unless perhaps, two distinct abscesses are formed in two distinct parts of the breast. But generally the intervals between such abscesses, are burst at the time of suppuration, and two or more abscesses near to each other, unite to form one imposthume. Such abscesses in the breasts are generally very painful, till a passage is opened to the gathered pus, either spontaneously or by the assistance of art.

It however was my fortune to see twice in lying-in women, the whole breast consumed by a violent suppuration, though they scarce felt any pain, and the skin only looked of a reddish hue. The suppuration being over, the skin grew to the parts underneath entirely, and of the whole breast, there remained nothing besides the flaccid nipple.

The suppuration which happens in the porous tunic, proceeds expeditiously enough; but the pus which comes out, varies and is unequal; the imposthume however is easily cleansed, especially if the abscess burst spontaneously.

But

* L'Art des accouchm. pag. 157.

But when the glandular part alone was affected, the bumps are felt in the breast by the touch; these do not always stick together, nay they are sometimes at a considerable distance; the skin of the breast is not stretched, nor is there pain felt in it at first; pain generally follows in it only when the abscess is upon the point of bursting. The suppuration goes on very slowly; nor is it effected at one and the same time in all the bumps: for it is usual when one abscess is burst, for another bump to give pain, to rise and to suppurate. Hence such a suppuration of the breast is sometimes protracted for months together, and sometimes in persons of a more advanced age for a year.

In such slow suppurations of the breasts, those remedies are useful which quicken motion, as for example, that poultice which is proposed in the *Materia Medica* at the foregoing article. The embrocations, recommended by *Levret* ^v, consisting of fixed alkaline salt, diluted in a large quantity of water and soap; and also the fomentations prepared of these, are then of great service. For care should be taken by every method to dissolve the whole into pus, and let nothing hard remain in the breast, which might give room to an apprehension of a schirrous tumour or a cancer.

I twice was witness of an extraordinary case in the same women. Whilst she was pregnant, the right breast began to swell without pain; that swelling was increased every day, so that on the eighth month of pregnancy, the mass of the breast reached the thigh, and there was a necessity for supporting it with a sling, otherwise the wretch was unable to walk. By the touch I could easily perceive six bumps in this vast breast; they did not stick together; they equalled the fist in bigness; and they were easily moved. Whilst I was apprehensive of the most fatal consequences, I was surprised to see after a happy delivery,

very, the whole mass diminish, the bumps dissolve, so that within the space of two months, the breast returned pretty nearly to its former magnitude; nor could the least hardness be perceived by the touch: however it was more flaccid, and hung down more than the left breast. But no remedy was applied. Becoming pregnant again two years after, she had all the same symptoms; and after delivery, they ended in the same manner.

*Nannoni*² has confirmed all this by practical observations. For he found that if the inflammation seized only the porous part of the breast, and suppuration followed, the secretion of the milk was not thereby diminished; the contrary obtained, if the glandulous substance of the breast was affected in the same manner; for then the secretion of the milk was diminished or ceased entirely, according as a greater or lesser part of the glandular substance was stuffed. He likewise observed a slower suppuration in the glandular part than in the porous, and that there was greater danger of a schirrous hardness remaining.

But if the inflammation going to subside into a suppuration, should seize at once both the porous and glandular substance of the breast, then the breast swells unequally; in some places it is harder than in others³, and the suppuration is more quickly effected in the porous part; whence such an abscess often bursts spontaneously, and pours out good pus, whilst the hard bumps still remain, which afterwards insensibly come to maturity.

For this reason, persons of skill have endeavoured to promote suppuration by softening remedies, adding discutients, as was said before; nay they even advise, that the exulceration after a crisis should be left closed, till the pus, having of its own accord, burst the coverings, makes a way for itself; for thus, whatever is hard is more easily dissolved, and the intervals

² Trattato delle malattie delle mammelle, pag. 48, 49, &c.

³ Levret sur l'Art des accouchm. pag. 157.

tervals between such imposthumes of the womb as are near each other, are loosened, that the pus may flow into one cavity, and so run out by the only opening ^b. It has been observed, that there remains a less frightful scar, if the abscess bursts spontaneously, than if it be cut with an instrument ^c.

The abscess being burst, or cut according to art, the most simple method is the best. Tent is always hurtful, as the chest being moved by breathing, the breasts are moved at the same time. *Nannoni* ^d never used unctions; but having applied the softest linen towels alone, he constantly fomented the breasts with warm water; at night he applied a small poultice of crumbs of bread, milk, &c. *Leuret* ^e covered the whole breast with a plaister, called the *Nurimberg* plaister, and fomented it with water mixed with alkaline salt, as has been said. At the same time, he wisely advises to move the arm with caution, whilst upon the bursting of the abscess, the pain ceases or is considerably diminished: for the muscles underneath the breast being in action, the pus is squeezed out, and is prevented from forming hollow, oozing ulcers. For authors have long since declared that this sometimes happens. Thus *Erotis* ^f after having advised when the breasts are diseased by the milk, to foment them with warm water, and then to cover them, *Argilla in aceto distemperata*: “With white
“clay made soft by vinegar,” adds, that if there should happen an exulceration after a crisis: *Quod si locus ille fuerit fistulatus, cum cura hoc poterimus subvenire. R. radicem mundatam hellebori nigri, & intinctum oleo vel melle impone, & pulverem de lappa combusta super insperge. Id enim omnem fistulam inundat, atque mortificat, &c.* “But if the place should be
“ulcerated, with this prescription we may assist the
“patient. Put upon the place a cleansed root of
“black

^b Ibid. 158.

^c Ibid.

^d Delle malattie delle mammelle, pag. 29—36.

^e In loco citato, pag. 159.

^f Spach. gynæc. erot. de passion. mulier. cap. 20. pag. 51.

“ black hellebore moistened with oil or honey, and
 “ over it scatter the dust of burned burs. For this
 “ will overflow and deaden the whole ulceration,
 “ &c.”

It sometimes happens, that though the abscess in the breast has been treated with the utmost care, the ulcer being consolidated, there remains something hard, which being left, gives room to apprehend a schirrous tumour: this happens chiefly when an abscess grows in the glandular part of the breast. The steam of warm water, gentle rubbing, and dissolving fomentations which have been recommended before, should be constantly applied till the whole is dispelled. Nor should any delay be admitted in the use of these; for the longer that hardness which is left remains, it will, with the more difficulty, yield to remedies. When the hardness which is left after the breast has suppurated, would neither yield to fomentations or plaisters. *Nannoni* ^f applied mercurial unction to the hardened part of the breast, and the whole was dispelled in the space of three and twenty days. However, he candidly acknowledges, that the mercurial unction had been tried in order to cure such a hard tumour, which had been in the breast for two years together; for though a great quantity of quicksilver had been applied, so that salivation followed, the cure did not succeed: the tumour was diminished in bulk, but the hardness of the remainder of it being increased, was the cause why there remained no hope of cure but from cutting it off. I have known hemlock taken at once internally and externally, happily dispel such tumours.

Can the pus, gathered in the breasts, and not evacuated, load the inside of the thorax? We meet with a surprising case in *Ballonius* ^g: *Mulieri dolor abortus est in mamma sinistra ab aliqua suppressione lactis, ut conjicere est. Tumor erat; disparuit. Saltem nil foras eminebat,*

^f Delle malattie delle mammelle pag. 61.

^g Epidem. & ephemor. lib. 2, Tom. I. pag 151.

eminebat. Non desit dolere illa pars, quamvis nil foret conspicuum. Macrescibat indies. Nil proficiebat. Languebat. Palpitatio cordis insignis unde ea oriretur, dubitabant : “ A woman was seized with a pain in her
 “ left breast, occasioned by a suppression of the milk,
 “ according to all conjecture. It was a tumour ; it
 “ vanished. At least there was no excrescence. The
 “ pain in that part did not discontinue, though no-
 “ thing appeared outwardly. The patient grew lean
 “ every day. She did not grow better ; she lan-
 “ guished. There was a violent palpitation of the
 “ heart ; it was doubtful whence it arose.” Whilst
 the physicians varied in their opinions concerning this
 hidden pain ; *Duretus* being sent for, accurately ex-
 amines all particulars : *Tandem collectum est parte in-*
teriore abscessum latere, qui, nisi aperiretur, mortem re-
pentinum esset accersiturus, contra multorum opinionem
ea parte septicum admovetur. Aetis aliqua ex parte cu-
nicularis, pus manavit multum, miraculo convalescit :
 “ At last it was concluded that an abscess lurked in
 “ the inward part, which if not opened, would oc-
 “ casion sudden death. Contrary to the opinion of
 “ many, recourse was had to an application to rot
 “ away the flesh. Some passages having been made
 “ in it, there run out much pus. She recovered, as
 “ it were, by a miracle.”

S E C T. MCCCXXXVIII.

PAIN in a nipple that gives suck, a chop,
 an inflammation, may be removed by the
 mildest balsamicks, and by spirituous cepha-
 licks applied to it.

The nipples which jut from the midst of the con-
 vexity of the breasts, vary much, both in thickness
 and length, in different women. It oftener happens
 that the nipples are so pressed down by the stays
 which

which girls are obliged to wear in compliance with a very pernicious custom, that they scarcely come out at all; nay, I have sometimes seen them subside entirely, so that in the place of the rising nipple, there appeared in the breast a little hole in which it lay hid. It is then impossible to give suck, except the nipple could be got out, which is often happily effected, if at the time of pregnancy, there be frequently applied a little cupping-glass, out of which the air is drawn by means of an air-pump; for then the depressed nipple rises up; and whilst this is often repeated, it begins to rise higher and higher.

The nipples consist of a spongy, elastic substance^b, composed of several bundles of ligaments, the extremities of which, constitute the basis, and the top of the nipples. These bundles have little plaits throughout their whole length, which, as they are lengthened in continuing the nipple, vanish, but immediately return again as soon as the lengthening out of the nipple ceases. Between these little elastic bundles, there are placed seven or eight little lacteal tubes, which gape with little mouths about the top of the nipple; and as those little tubes stick very fast to the bundles of ligaments, they are with them folded and stretched out. A thin lengthening out of the skin, covers the nipples, on which the epidermis afterwards lies.

Whilst the child sucks, it often presses the nipple between its lips, and often between the gums, and by drawing, lengthens it out, and so draws the folded lacteal tubes into right lines, and prepares an easy passage for the milk out of the breasts.

It sometimes happens that ill-humoured children, by frequently sucking and strongly pressing the nipples between their gums, so irritate them, that they feel pain, and are inflamed: to this the sour spittle of the child contributes, whilst children just born are troubled with pimples about the internal parts of the

VOL. XIV. T mouth,

^b Winslow. *exposit. anatom.* pag 585, 587.

mouth, attended with a fever: about the time of breeding the teeth, whilst the gums itch, they often sadly torment the wretched mother by pressing her nipples; nay they often tear the coverings, whence arise bloody and painful chaps, which cannot without great pain, bear the touch of the incumbent shift.

These disorders are very troublesome to women who give suck, and often render it impossible for them to do it, to the prejudice of the child, and with great danger, lest the milk retained in the breasts should be coagulated; and all those ill consequences should follow that have just been spoken of.

The use of spirituous remedies is generally recommended; as for example, the spirit of rosemary, if a moist cloth should be applied to the nipple (see the *Materia Medica* at this article) but it is evident that if the nipple be chapped, excoriated or much inflamed, the pain must be greatly increased. So that these are of no use, except when the nipple is still whole and not inflamed; that by spirituous applications, the nipple may be strengthened, and that its coverings may become more callous, that they may the more easily bear suction and pressure. But when the nipple is already chapped, and an acute pain is felt in it, the mildest things are proper; such as are enumerated in the *Materia Medica* at this article.

I made use of the following method for the cure of these disorders, and that with good success: if the nipple being either inflamed or chapped felt pain, I took care to have it fomented with linnen rags, moistened with the juice of house-leek, often applying new rags, lest they should be fixed to it, and should stick; I got a cover made of lead or wax, and open at top, which was to receive the nipple that was in pain, and prevent the shift or the clothes from any way pressing it. I took care to have the chapped places of the nipple anointed with oil of wax, made clear and very mild by repeated distillations. *Nam remedium est incomparabile prorsus, ad mala papillarum nervosarum,*

nervosarum, quæ in cute extrema occurrunt. Nam in curandis fissuris labiorum hybernis, in fissuris papillarum in lactantibus, in digitorum manuumque rhagadibus, vix aliud habet simile, si subinde levi illitu applicetur: “ For “ it is every way an incomparable remedy for the “ disorders of the nervous nipples which occur in the “ outermost skin. For in curing chaps, occasioned “ by the cold of winter, and in curing chaps in the “ nipples of women that give suck, as well as in the “ fingers and hands of children, there is scarce any “ thing like it, if the parts be slightly smeared over “ with itⁱ.” By reiterated distillations, the oil of wax, which at first came out thick like butter, and had an ill smell, is rendered thin and fragrant.

Whilst these things are done, the child is under a necessity of sucking milk from the other breast alone; if the first breast should swell too much with milk, it may be emptied by being properly sucked by a woman hired for this purpose, who will easily avoid the places that feel pain, when she applies her lips to the top of the nipple. A breast swelled with milk, is likewise often conveniently enough emptied by suction; a glass vessel which has a long pipe being placed upon it.

In this manner these disorders are generally cured in a short time. But the clefts being consolidated, and the inflammation thoroughly laid, then the nipple may be strengthened by spirituous applications; perhaps it may be better to begin with such as are diluted, lest the part should be again irritated, and care should be taken to guard against a sudden and excessive wrinkling of the lacteal tubes, whose extremities are opened in the summit of the nipple. Mastic, if it be mingled with an equal quantity of water and spirit of wine, furnishes us with such a remedy.

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S E C T.

ⁱ Herm. Boerh. chem. Tom. II. pag. 157.

S E C T. MCCCXXXIX.

MILK that is too abundant and too thin, is made better by mild and dry food, and by exercise : milk that begins to fail, by moist, gentle, nourishing food ; by fomenting and rubbing the breast ; by removing the cause which has been sought out.

Milk that is too abundant, &c.] We are all, as it is well known, nourished by our own milk. Therefore in women that give suck, part of the food is carried to the breasts that the child may be nourished, and all that is deducted from the nourishment of the nurse. Whence nurses, if they be strong, and in good health, always use a larger quantity of meat and drink, and thus are able to give suck to a robust child, or to more than one, without impairing their health, as is universally known.

But sometimes it happens that so great a quantity of milk is carried to the breasts, which is at that time very thin, that the nurse's body is defrauded of its nourishment, as all the fresh chyle is immediately separated from the blood, whence all the humours are rendered more sharp, and somewhat putrid : there arises a thirst ; a slight fever ; and the body would waste away with a consuming fever, if that excessive secretion of the blood could not be corrected. Sometimes it is a very difficult matter to compass this. Dry food but mild, of roast flesh, of pulse made of barley, oats and rice, but somewhat thick and exercise are very beneficial. The drink should be sparing, but unmixed. Mild ale, but unmixed and the liquid extract of bread, are highly beneficial to those who have been used to such liquor : such ales contain a great quantity of nutritious matter, and

as they are of a thick consistence, do not ferment ; hence they continue mild and soft, let them be kept ever so long. If upon trying these, the too great secretion of the milk is not diminished, the child should be weaned ; otherwise the nurse would shortly be unable to support it. I have known even after the child has been weaned, a troublesome dropping of milk from the breasts continue ; the nurse growing leaner and leaner every day. When I had tried various remedies in vain, the disorder at last ceased, upon giving every three hours a strong infusion of sage, each dose containing one or two ounces.

Milk that begins to fail, &c.] Every thing of a contrary nature is made use of in this case ; for example, moist food, rest, nourishing, diluted drink, as a decoction of barley or oats, with a third part consisting of fresh milk mixed with it, copious broths, fresh eggs, and things of the like nature ; out of which, a quantity of good chyle is easily formed by the action of those viscera, which make the chyle. By these a quantity of milk is easily made to flow with the blood, if the woman be in other respects in good health : but then the secretion of the milk in the breasts ought to be promoted ; this end is compassed by fomenting and gentle chaffing, chiefly by frequent suction either of the child, or if it should be unwilling, of another woman. Take notice that it is natural enough to despair in this case, as medical history informs us, that milk has not only been brought into the breasts of virgins, but of men, whilst they endeavoured as they thought, to quiet ill-humoured children by making a shew of giving them suck. If other copious evacuations by stool, sweating, &c. be the cause ; these are to be stopped.

There may however be such causes of the badness of the milk, as either cannot at all, or cannot without great difficulty be removed. *Hippocrates* ^k has made the following observations : *Ut plurimum vero*

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quæ

^k De natura pueri, cap. 10. charter. Tom. V. pag. 323.

quæ pauca menstrua demittunt, eas sine lacte esse contingit. Sicciores enim sunt & densiore corporis habitu: “ Generally speaking, indeed those whose courses are inconsiderable, are liable to be without milk. “ For they are dry, and of a very dense habit of “ body.” And in another placeⁱ, speaking of those inconveniences with which cities, situated towards the north, are infested, he takes notice that many women become barren: *Propter aquas quæ sunt duræ, crudæ & frigidæ; purgationes enim mensium non contingunt idoneæ, sed paucae et pravae:* “ On account of “ the waters which are rough, unpleasant and cold; “ their courses are not regular, but scanty and vitiated.” And then he adds: *Quum vero pepererint, pueros nutrire non possunt. Lac enim aquarum duritie, & cruditate extinguatur:* “ But when they bring “ forth, they cannot give suck to their children, for “ the milk is destroyed by the hardness and ill taste “ of the water.”

If there be a defect in the structure of the breasts; if the whole body be dense and brawny (such women are commonly called viragoes) in such there is often only an appearance of breasts, and all the vessels are so contracted, that they are unable to yield to the milk that is impelled towards them; then the milk will certainly fail. Of such, *Hippocrates*^k has said: *Sunt autem, quæ natura lac non habent, & quibus lac ante tempus deficit. Ex vero natura solidæ sunt, & densæ carnis; ideoque, cum via densa sit, non a ventre ad mammas satis humoris deferitur:* “ But there are “ some, who by nature have no milk, and some “ whose milk fails before the time. But these have “ naturally solid and dense flesh; therefore as the “ passage is dense, there is not humour enough carried from the belly to the breast.” I have in others, sometimes seen breasts of a great bulk, but quite overwhelmed with fat, so that all the lacteal ducts

ⁱ De aere, locis et aquis. cap. 2. charter. Tom. VI. pag. 192.

^k De mulier. morb. lib. 1. cap. 72. charter. Tom. VII. pag. 71.

ducts being compressed by the superincumbent fat, could not admit so much as a drop of milk.

It is very evident that these causes cannot be removed by any art.

Of the Diseases of Children.

S E C T. MCCCXL.

A Child just born is subject to diseases peculiar to itself; arising, 1. From the glutinous, cheesy and tough scrapings, by which its mouth, gullet, stomach and intestines are filled.

Having treated of those particulars which have been observed in virgins, in pregnant women, at delivery, and during child-bed, it now remains for us to treat of those diseases which have been observed in a child just born. For though as soon as it enters upon life, it is subject to many (for example, it will appear in the following chapter, that a foetus has had the small pox in it's mother's womb) yet here we shall treat only of those diseases whose causes exist only during the birth of a man, and which are not observed during the rest of his life, or at least not often.

For there happens a great change in a child just born; being a little before shut up in it's mother's womb, defended by a circum-ambient humour from all compression, and free from the touch of the air; it is affected neither by sound nor light acting upon it. At it's birth it is driven out by force; it suffers new uneasiness from the air to which it is unused, and from the handling of it's nurse, which is sometimes a little too rough. But how great a change does there at the same time happen in the internal parts.

The lungs, which before received but little blood, now transmits all the blood of the whole body, and pours it into the left side of the heart: this viscus which sunk before, is now expanded by the air which is breathed into it. The diaphragma, whilst it acts, increases the cavity of the breast, presses down the liver: in the liver itself, the motion of the humours is changed. It is not therefore to be wondered at, that a child should cry coming into life, though in other respects, in the most perfect state of health. That sudden and extraordinary change occasions its crying. This *Pliny* has prettily expressed in these terms¹: *Itaque feliciter natus jacet, manibus pedibusque devinctus, flens animal, cæteris imperaturum, & a suppliciis vitam auspicatur, unam tantum ob culpam, quia natum est*: “ Being happily come into the
 “ world, he lies with his hands and feet bound, a
 “ weeping creature, though born to command
 “ others, and begins his life by suffering, for one
 “ fault only; namely, because he is born.”

When the child is born, it is still tied to the placenta by the navel-string; which connexion should be dissolved: for hitherto it partook of one common life with its mother: but as soon as ever the navel-string is cut, it has nothing more in common with its mother, but lives a life of its own. Wherefore *Levret*^m has wisely advised not to bind nor cut the navel-string, except the child has first breathed: for sometimes they are born pale and weak, especially if they have stuck long in the passage out of the pelvis, and they do not cry; by gently shaking the child, by chafing it, by stirring the jaws and the nostrils with a feather, by putting salt upon the tongue, and by otherwise stimulating, they rouse the sleeping motion, and whilst these things are done, they keep up the free intercourse between the fœtus and its mother, by the navel-string.

But

¹ Hist. lib. 7. in proœmio.

^m L'Art des accouchm. pag.

But if the new-born child should have a swelled, pale face, and should not breathe, or should breathe but little, the navel-string should be suddenly cut, and that without tying; that a certain quantity of blood running out, the lungs loaded with blood, and not yet dilated by free breathing, may be disengaged. For there is great danger of suffocation. But as soon as ever the child begins to cry, now freely breathingⁿ, the navel string is to be tied.

But the navel-string is tied at the distance of four, five or six fingers breadth from the navel, that room may be left for a new ligature, if the first should slip, the navel-string falling down; or if being tied too strongly, it should cut the umbilical vessels; the consequence of which might be a hæmorrhage.

Therefore this caution alone is required, that the navel-string should not be cut at a place near the navel: I have known it the custom in some families to tie the navel-string at the distance of ten or twelve fingers breadth, and not to cut that part of it, which was beyond the ligature; but to apply it rolled up in a linen rag to the body of the child, till the whole fell. This rag being of a size any way considerable, causes some inconvenience, but no mischief.

However, the separation of the navel-string, at whatever distance it be tied, is always made near the navel. For the skin of the child's belly, covers the navel-string at the distance of a few lines; and in the place where the skin ends, there is made a separation, which generally happens on the 4th, 5th or sixth day.

The whole body of a child just born, is covered with a slippery glue; the quantity of which, varies in different children; for which reason the skin is rubbed with soft sponges in a warm bath, that it may shine: then the whole skin looks red, as if there was something of St. Anthony's fire upon it^o; and after a few

ⁿ L'Art des accouchm. pag. 210.
med. Tom. I. cap. 3. pag. 62.

^o Broufct. educat.

few days it is customary for the epidermis to be scaled. The redness of the skin, appears as plainly in a negro as an European ; and it is vulgarly thought the skin will be the brighter, and the fairer afterwards, the redder it had been in the child when just born^p.

The brightness of the skin is justly praised, not only in children newly born, but afterwards likewise : for children are subject to many cutaneous disorders, except the skin be every day rubbed gently : *Galen*^q advised, that the whole body of a child newly born, should be sprinkled over with salt, that whatever was glutinous, might be the more effectually rubbed off: his view in directing this to be done, was that the skin might be rendered the more dense and solid : but it hardly seems proper that the skin, as it were, somewhat inflamed and red all over, should be irritated by a thing of so stimulating a nature as salt. It will be sufficient gently to wash off the dirt with water moderately warm, with which some mix a little soap, and a small quantity of wine.

Whilst the child remains in this bath, it should be carefully examined whether any defect appears upon it. For it is customary, especially after a difficult delivery, for a swelling to appear in one part or other of the head, which is generally speaking, happily cured by those discutient medicaments, which have been treated of where the method of curing a contusion was delivered. *Levret*^r has however observed, that children who have such tumours in the hind part of the head, seldom live long, but die in convulsions : such tumours in other parts of the head are not attended with the like danger. The same thing is to be apprehended, if in a new-born child, the futures are far distant from each other ; for this usually happens, either because they came out of the womb

^p Vander Monde essai de perfect. l'espece humaine, Tom. II. pag. 6.

^q De sanit. tuend. lib. 1. cap. 7. charter. Tom.

VI. pag. 50.

^r L'Art des accouchm. pag. 212.

womb too soon, or because the lymph præternaturally collected in the cavity of the skull, begins to occasion a hydrocephalon.

It happens likewise in a difficult delivery, that some limb is put out of joint or broken. *Peu*^s candidly acknowledges, that such misfortunes have befallen him: the parts are immediately to be reduced to their natural situation, and the cure generally succeeds happily in these tender bodies, and without leaving any deformity behind it. *Levret*^t bears witness to the same thing.

At the same time it should be examined in new-born children, whether the passages of urine and stool are disengaged. If it has voided both its urine and excrements after birth, there is no danger to be apprehended: if not, these parts should be examined whilst the child is bathed.

Sometimes in new-born children, the anus has been found of a proper structure, but entirely closed up by a præternatural membrane: there was therefore no passage for the excrements to come out at; and if they should not be forced out of the body, the worst consequences would follow, and at last death; as will appear in sect. 1345. If such a membrane should stick about the beginning of the anus, the cure generally succeeds happily enough, by cutting away this impediment: *La Motte*^u tried this upon two children with success. After the bowels had been well evacuated, he washed the anus in spirit of wine, and covered it with dry linen rags; and thus in the space of a few days, compleated the cure. But he made no use of tent, because that by its bulk, like suppository perpetually provoked to a discharge of excrements.

In this case, a jutting tumour generally appears in that place of the anus, in the midst of which, the
black

^s *Pratique des accouchm.* liv. 2. chap. 1. pag. 314.

^t *L'Art des accouchm.* pag. 214.

^u *Traite des accouchm.*

. 1. observat. 86. pag. 129.

black colour of the child's excrements appears; if that place should be pressed, it shrinks backward like soft paste; but the finger being removed, the tumour presently returns again^{*}; which *Levret* does not only advise to cut, but would have it in its whole circumference, cut in a circular manner. *La Motte* however, cured it by simple cutting, and others have been successful by the same method.

It is a much more difficult case, if such a closing membrane should stick in a higher place of the rectum intestinum. We meet with an account of such a case^y: the anus appeared to be well formed in the child; but it had not had a stool for two whole days after it's birth; whence, all the ill consequences which arise from a retention of the excrements followed. Recourse was had to clysters to no purpose; they could not penetrate to the cavity of the rectum intestinum: upon examination there was a thin membrane found, closing the cavity of the intestine, and having put the little finger into the anus, an instrument was thrust in, and pushed up its passage along with the finger, as far as the closing membrane; which then, the lancet being thrust out, which is hid in the cavity of the phleme, was cut with safety, and the hole made by the top of the finger, was dilated. The child soon after had a stool, and the anus afterwards performed it's proper function for the two months during which the child lived; afterwards it died of some other disorder. The death of this child could not with any appearance of probability be ascribed to this operation, as it had survived it so long.

But when there appears no trace of the anus, there seems to be but little hope left. The child must inevitably die, if the excrements do not come out: hence, according to the rules of art, an uncertain remedy is to be preferred to sure destruction, if the
parents

^{*} *Levret l'Art d'accouchm. pag. 216.*
chirurg. Tom. I. pag. 385.

^y *Acad. de*

parents would suffer it. Hence eminent surgeons having cut the place where the anus is naturally to be found, have endeavoured to make a way to the rectum intestinum, in hopes of making a passage for the retained excrements, and then they were for preparing an artificial anus. *Petit*^z has pointed out a method, and shewed the cautions to be observed in performing such an operation according to the rules of art. He has preferred the triangular needle to other instruments; but he would have it of the thick, short sort, that the needle being brought out of the case, the lancet or little blade may be safely thrust in; in a word, he neglected nothing which art required. But all things are uncertain; we do not know what impediment may lie hid: yet anatomy puts it out of all doubt, that there are impediments which cannot be mended by any art. The celebrated *Littre*^a found in a child that died six days after its birth, the rectum intestinum divided into two parts, which still stuck to some small threads a thumb's breadth in length; each extremity of the intestine so separated, was closed. It is obvious enough, that such a disorder cannot be known till after death; and though it should be known, there is scarce any hope of curing it. Mention is indeed made of some method; but who would venture to open the abdomen of a living child, to search for the extremities of the intestines, to open them when found, to join them to each other when found, or at least so to unite the upper extremity of the intestine, which was before open, to the cut in the abdomen, that the artificial anus may continue during the child's whole life in the place where it was made. No such cure was ever attempted by any one to my knowledge.

Sometimes the whole rectum intestinum is wanting. A very able surgeon^b did not find the smallest trace

^z Acad. de chirurg. Tom. I. pag. 377.

^a Acad. des scienc. 1710. hist. pag. 47.

^b Medic. essays & observ. Tom. IV. No. 32. pag. 442.

trace of an anus in a new-born child; he made an incision deep enough; having thrust his finger into the wound, he did not find the intestinum rectum; he thrust the triangular needle more deeply through the wound to make way for the excrements; but nothing came out but a few drops of blood. After death, he found that the intestinum rectum was quite gone, and that the colon being full of excrements, and freely floating in the abdomen, ended in an extremity perfectly closed.

Wherefore *Levret*^c seems to have been in the right in advancing, that such disorders cannot be cured, except the rectum be entirely whole, even to it's coverings. Sometimes the extremity of the intestinum rectum, deviating from it's true path, is united to the bladder in male children; then the excrements roll into the cavity of the bladder, and cannot come out by the urinary passage, except they are liquid; whence it is evident, that such unhappy children cannot live long^d; in the female sex it has been observed, that the end of the rectum intestinum gapes into the pudendum^e. Such may survive, and I have known a marriageable girl, otherwise in perfect health, have this loathsome distemper.

I am not ignorant that practical examples are alleged, which shew that this operation has been performed with success, whilst there remains no trace of the anus; but these examples seem to be somewhat doubtful. The case of *Hildanus*^f is usually cited, who is believed to have in this manner, preserved a child six days old, that had never voided its excrements, and was in imminent danger of death. It was happily cured; and afterwards *Hildannus* received information from the consul of the place where the child who was cured, lived; that it lived to the age of eighteen in good health. But certain it is, that the

^c L'Art des accouch. pag. 216.
4to. 1755. hist. pag. 50.

^d Acad. de scienc. in
^e Ibidem.

omn. centur. 1. observat. 73. pag. 54.

^f Oper.

the very words of *Hildanus*, prove that there was some appearance of an anus. Thus he expresses himself : *Anus obducta erat membrana prædura, in qua nullum fere indicium aut vestigium ani, præterquam macula nonnihil livida* (occasioned by the excrements appearing.) *Illic facta parva incisione (ne sphincter læderetur) novacula linteis juxta aciem involuta, deinde immisso speculo ani, & quod reliquum dilatato, statim rejecta est incrementorum colluvies :* “ The anus was covered with a very hard membrane, in which there was scarce any appearance or traces of the anus, except a spot somewhat livid, (occasioned by the excrements appearing.) There having made a small incision (least the contracting muscle should be hurted) with a razor wrapped up in a linen rag, and then having thrust a probe into the anus, and dilated what remained, a large quantity of excrements was thrown out.” From hence it is manifest that the *intestinum rectum* was whole, even to it's coverings.

The other case we meet with in the celebrated surgeon *Saviard* †, of a child, in whom there was no appearance of an anus: he thrust in a long lancet, which he used to open abscesses of a considerable size, the length of three fingers breadth; and then the excrements came out; he dilated the whole that had been, and bound up the wound in the usual manner. There therefore remains no room for a doubt, that a man of such sincerity attempted an operation of this nature. But he observes a profound silence with regard to it's success. Nor had those cases which are to be met with in the academy of surgery, an happy issue.

Impediments of the like nature have been found in the urinary passage; for sometimes the orifice of the urinary passage was not open in the nut or the clitoris, and then the cure was not difficult: Sometimes part of the urinary passage is entirely wanting, and then

then this disorder cannot be radically cured^h. But this disorder is longer born by the child, than if it was in the intestinum rectum. For the urine finds a passage for itself; sometimes it bursts out through the navel, sometimes it makes a little passage by the scrotum; we have an account of such a caseⁱ. But as there was no retention of the urine, and the child as it grew up was not troubled with any disorder, that prudent surgeon did not chuse to attempt any thing. I have seen some in whom the orifice of the urinary passage, gaped under the nut in the lower part of the yard.

It sometimes happens that a new-born child has some superfluous limbs which are of no service, but are rather the occasion of inconvenience. Thus I have sometimes seen six fingers, both upon the hands and feet: such superfluous fingers generally consist only of flesh, not supported by any bone, and they render the hands deformed. *La Motte*^k bound four such fingers with a waxed thread in a child just born, and they all dropped off within three or four days, and scars were spontaneously formed where they had been. Nor did it any way appear that these ligatures did the child any hurt.

But all are not agreed with regard to the time when these superfluities should be retrenched. Some advise to do it after the child is weaned or even later: others immediately after its birth; which opinion *Levret* adopts^l, on condition the child is in good health: for he assures us, that no one ever repented of doing this, and that many other surgeons, by his advice, attempted it with good success.

A new-born child, as has been said, is moist throughout the whole surface of its body, with a slimy glue often very thick. Glue is generally called a hal fluid body, whilst one part of it moves, the neighbouring

^h *Levret l'Art d'accouch. pag. 218.*
des accouchm. liv. 1. observ. 85. pag. 129.
pag. 128.

ⁱ *La Motte traité*
^k *Ibiden*

^l *L'Art d'accouch. pag. 220.*

bouring parts are attracted, whilst the whole mass of glue does not change it's place. But a glue of a like nature is found in the mouth, the stomach, the gullet, and the intestines, and it comes spontaneously from new-born children out of their nostrils, or even out of their mouth; or is taken out by the midwife whilst she clears the skin.

As long as the foetus clings to it's mother's womb, it is washed on every side by the liquor of the amnion; this liquor, whilst the humours run out, the membranes being burst at the time of delivery, often appears pretty viscid; the whole skin is covered with such a glue, which therefore seems to owe it's origin to the liquor of the amnion; but as many are of opinion, that the foetus not only receives nourishment from it's mother by the umbilical vessels, but is also nourished by the mouth, swallowing the humour of the amnion, they easily thought that they knew the reason why the hollow viscera are covered from the mouth to the anus, with such a glue as is found on the surface of the skin.

Others, on the contrary, have imagined that the liquor of the amnion is rather excrementitious, and is produced by the body of the foetus; that the foetus does not swallow in the womb; that it always has it's mouth shut; that the liquor of the amnion is not to be found in the ventricle and the intestines of the foetus. They add that foetuses have been observed which were without a head, and yet grew. Many other arguments, both for and against this opinion, are to be met with^m. But this does not seem to be a proper place to discuss and examine all particulars; it is sufficient to know that such glues are found in the passages of the first coction, as well as in the external surface of the skin; at the same time it is known, that tough, slimy matter, is secreted in the mouth, the gullet, the stomach and the intestines,

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^m Medic. essays & observat. Tom. I. pag. 171, & seq. Tom. II. pag. 121, & seq.

during the whole life ; so that this being secreted in the foetus, and not thrown out, may be accumulated. Perhaps, immediately after birth, a greater secretion is made, as in the foetus all the secreting organs appear swelled : thus the liver is found big and full of juice ; and in the same manner the whole glandular system swells.

But it is said in the text, that not only clammy ; but tough matter resembling cheese, is found in the first ways of a child newly born. It appeared in the preceding chapter, that real milk comes to the womb chiefly at the latter end of the time of pregnancy. Hippocrates ⁿ said : *At vero puer, compressis labris, ex matris utero sugit, ac tum alimentum, tum etiam spiritum, &c. Quod si quis roget, quomodo hoc quis noscit, quod puer in utero trahat & sugat, hoc illi respondere licet. Pueri quum nascuntur, stercus in intestinis habent, ac in lucem editi, tum homines, tum pecora, celerrime ventrem exonerant. Atqui stercus non haberent, nisi in utero surgerent, neque ut primum puer natus foret, ubera sugere posset, nisi in utero suxisset*

“ But a child, with compressed lips, sucks from it”
 “ mother’s womb both nourishment and breath, &c.”
 “ but if any body should ask how this can be known”
 “ that the child in the womb draws and sucks, this”
 “ answer may be made him. When children are”
 “ born, they have excrements in their intestines”
 “ both men and beasts, when they come into the”
 “ world, quickly void their excrements ; but they”
 “ would not have excrements if they did not suck in”
 “ the womb, nor could a child as soon as born”
 “ suck the breasts, except he had sucked in the”
 “ womb.”

Some would have it, that as in children just born the breasts have been found swelled with milk in both sexes, the foetus sucked it’s own breasts in the womb chiefly at the latter end of the time of pregnancy. Certain it is, that the situation of the child, and the ease

ⁿ De carnibus, cap. 3. charter. Tom. V. pag. 304.

easy flexibility of the back bone, favour this opinion. I have often seen in children just born, the breasts so much swelled and so hard, that there was occasion for fomentations and plasters to dissolve that gathering. It is likewise sometimes observed, that the breasts are raised a few days after the birth. Some have imagined that this is occasioned by the tying of the navel-string; for the umbilical artery being compressed, they would have it that the blood goes backwards through the epigastric arteries, communicating with those of the breasts. This may perhaps be true. A physician was surprised, that a fœtus two days after it's birth, was seized with a shuddering, then with a heat, and was feverish: at the same time, it's right breast swelled, which whilst he gently pressed, a few drops of milk run out of the nipple. The physician examining the matter, found that both the child and it's mother, were attacked by the milk fever about the same time. He afterwards was informed by the parents, that when the right breast had by degrees intirely subsided, the left breast swelled in the same manner; from which there came in likewise a few drops of milk.

But the argument of *Hippocrates*, namely, that a new-born child could not suck, unless it had been used to sucking in the womb, does not appear to be altogether conclusive. For he himself, as I have observed upon another occasion in sect. the 1st, acknowledges, that: *A nullo edocta natura, & citra disciplinam, omnia, quæ conveniunt, efficit*: "That nature taught by no one, and without instruction, effects all things requisite:" If the calf with it's yet unarmed forehead strikes, if the fawn kicks with it's hoof still soft, it will not appear so extraordinary that a new-born child should be able to suck, though it had never sucked in the womb.

S E C T. MCCCXLI.

FROM which cause alone, qualms, vomiting, griping, sobbing and convulsions often arise; and these are followed by indigestion of the food which is eaten.

Whilst such a heavy glue floats in the ventricle, or sticks to the jaws, it produces qualms and vomiting by irritating only. In grown persons very disagreeable qualms are often occasioned by this cause; nay, by only shaking a little feather in the jaws, qualms and vomiting are often occasioned, as is well known. Therefore in tender, new-born children, the same things may happen from a slighter cause; if such glutinous scrapings should stick about the orifice of the gullet, a sobbing will follow; gripings in the intestines will be produced by the same cause, especially if that glutinous matter, already beginning to be corrupted by the free access of the air, should be made more sour; but these gripings are oftener occasioned by the excrements being retained too long, which shall be treated of hereafter.

Whence the reason is evident, why *Hippocrates* reckons vomiting amongst the disorders of young children, and of children just born. But as it was demonstrated in sect. 652, that the immediate cause of qualms and vomiting, is a convulsion of the muscular fibres of the jaws, of the gullet, the stomach, the intestines, the diaphragm, and the abdominal muscles; it is obvious enough why qualms and vomiting, if they be violent or last long, excite general convulsions; as the whole nervous system is so moveable in tender children, and so many extraordinary accidents happen to children just born. *Hippocrates*

ha

has well reminded us of this^q, where he treats of children just born; these are his words; *Quin et loco spirituum & cognatorum humorum, cum quibus familiaritatem et amicitiam in utero intercessisse necesse est, externis omnibus utitur, crudioribus, siccioribus, & minus in humanam naturam redactis*, (ἥσσαν ἐξηνδρωπισμένουςιν.)

“ But in the room of spirits, and humours of a similar nature, with which it must have a great familiarity and connexion in the womb, it uses things external, more crude and dry, and less assimilated to the nature of the human body (ἥσσαν ἐξηνδρωπισμένουςιν.”) For it is known that the humours of the human body are produced from the aliments taken by the strength and action of the viscera and the vessels. For as long as the foetus remains in the mother’s womb, nothing comes to it but what has been subdued in the mother’s body, and has acquired the nature of it’s humours, or makes a near approach to it. As soon as it is born, the navel-string being cut off, all communication with the humours of the mother ceases; and it must receive it’s nourishment by it’s mouth, and subdue it by it’s own strength: wherefore *Hippocrates* soon after adds^r: *Ex quibus multos suboriri dolores, multas etiam mortes; quando uidem & plerumque viris, tum locorum, tum victuum, mutationes morbos pariunt*: “ From whence arise many pains, likewise many deaths; as generally speaking, changes of place and food, produce diseases even in men.”

It is obvious enough, that the cleansing and removing this glutinous matter are required: for if it was to remain, indigestion of the food taken in, would necessarily follow. For it is known from physiology, that the arteries through the whole tract of the intestines, and the ventricle throw out at every considerable distance, a thin humour, which moistens and dissolves the contents of the ventricle and

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intestines,

^q De oſtimestri partu, cap. 2. charter. Tom. V. pag. 352.

^r Ibidem.

intestines, and makes them fit to be changed into chyle, to be absorbed by the lacteal vessels. But if the sides of these viscera should remain covered over with such a glutinous crust like vernish, the arteries will neither be able to exhale, nor the veins to suck in; insomuch that the food which has been taken being scarce changed, and retaining it's nature, the cavity of the intestines will be filled, and the abdomen will quickly swell, whilst the rest of the body will be emaciated for want of nourishment.

It is likewise known that the pancreatic juice, and both sorts of bile run into the duodenum: if that channel covered over with tenacious glue, should refuse a passage, or afford one with great difficulty, the actions of these viscera will be disturbed, and the bile having returned into the blood, will occasion jaundice. For the liver is of a considerable bulk in young persons, and bile is found very plentiful in children just born, being separated and gathered in the last months, whilst the foetus remains in it's mother's womb, and yet is not thrown out, as the diaphragm being at rest, does not move the adjoining liver before the child breaths.

This is the reason why the jaundice is so frequently observed in children just born; but it is, generally speaking, quickly cured: for the glue which obstructed the passage of the bile being wiped away, the disease soon ceases, and the bile itself, whilst it runs into the intestines, most efficaciously dissolves all that glutinous matter, makes thin the tough, and promotes stool by it's natural stimulation. Upon which subject, see what has been said in sect. 75, where the cure of diseases, occasioned by a glue which comes of itself, was treated of.

S E C T. MCCCXLII.

IT is easily cured by a fast of ten or twelve hours; by taking a little wine mixed with honey

honey, given by reiterated doses during this time of abstinence; or something of a gently purging, or stimulating nature be added to it.

However all those ills which owe their origin to glutinous matter, accumulated in the *primæ viæ*, are not so hard to be surmounted. For a fast of ten or twelve hours, is often alone sufficient to remove them. By the motion of breathing, all the abdominal viscera are agitated and shaken. The bile which is very copious in children just born, running into the intestines, if it's passage be not obstructed, dissolves that glue, and cleanses the cavity of the ventricle and intestines: the peristaltic motion being increased by the natural stimulation of the bile, wipes off that glutinous matter by friction, whilst the bile itself being mixed with it, diminishes it's tenacity. For as it has been sometimes observed upon another occasion, the intestines have no great cavity in a living man, but the sides being of a considerable thickness, touch each other mutually; whence the filth, which naturally daubs the hollow surface, being constantly separated by the peristaltic motion, is wiped off, lest it should be a burthen to it by being accumulated. Hence the ventricle and intestines are so cleansed, merely by an abstinence of a few hours, as to be fit conveniently to receive, retain and digest the aliments which are given to new-born children.

This wiping away, and expulsion of the glutinous matter, is admirably promoted, and that with safety, if a little honey diluted with wine or mead, is often given, in a small quantity however, namely a dram or two during this time of abstinence; a gentle stimulating purgative, added to these, may be of service; such is to be had from the syrup of succory with rhubarb; with which a little Venetian soap is likewise mixed, which furnishes a powerful and gentle remedy for attenuating the glutinous matter: the use

of soap is chiefly recommended if a tincture of the jaundice appears upon the skin, or the urine should stain the sheets with a yellow colour: for then we are certain, that the free passage of the bile into the duodenum, is obstructed by the glue; which is to be wiped off as soon as possible: prescriptions of such remedies are to be met with in the *Materia Medica* at this article.

Moschion^s recommends honey somewhat boiled for children just born, or he directs warm mead to be poured into the mouth: *Ut stomachus et venter purgetur*: “That the stomach and belly may be purged.” Thus it is prepared to take it's milk.

But what nourishment is good for new-born children after the cleansing of the first ways is not agreed upon by physicians. *Aetius*^t in like manner, recommends clarified honey and warm mead, poured down the throat; then he directs, that the mother having first wiped the thick milk from her breasts, and applied a fomentation of warm water, should give suck to the child; but he soon after adds: *Prestat tamen usque ad quartam diem a matris lacte abstinere*: “It is however better to abstain from the mother's milk till the fourth day.” *Paræus*^u would have the secundines thoroughly purged off before the mother should give suck to the child. Nay, *Moschion*^x entirely disapproved of the mother's milk, and preferred that of another person; because he apprehended that from the fatigue undergone in delivery, and the evacuations after, the milk must be ill-conditioned, thick, and of difficult concoction.

Perhaps this reasoning may at first sight appear specious; but as soon as physicians scorn to follow nature, they generally err.

After an abstinence of a few hours, the new-born child has occasion for food; wherefore, if milk is denied

^s Spach. gynæc. pag. 7. No. 71, 72.
pag. 67. versâ.
pag. 7. No. 73.

^u Spach. gynæc. pag. 413.

^t Lib. 4. cap. 3.

^x Ibid.

denied it, a different sort of food ought to be given it. They give it pap made of milk or broth. But these are unfit for it, quite different from the food that was used by the child whilst it remained in it's mother's womb. A few hours before, it lived upon it's mother's humours: humours of the like nature are ready in the breasts prepared in the mother's body for the use of the new-born child, who longs for these, and knows how to suck, though taught by no body.

A wise physician after delivery, procures the woman delivered, a gentle sleep; by which when she has been refreshed, there is nothing to be apprehended from the pains of delivery which are over. Nor is there any thing to be feared from the secundines, though they are of a nature somewhat malignant; of which enough has been said in the preceding chapter. That first milk is not thick, but diluted and thin, and different from that which at the time of the milk-fever will be gathered in the breasts. That first milk, gently purges and cleanses the first ways. The celebrated *Monro* y admired the wisdom of the creator, who supplied children, newly born, with a thin, diluted milk, which purges gently, and the first ways being well cleansed, gave another three or four days after, more thick and more nourishing

Wherefore I always took care that the children should suck their own mother's milk after she had been refreshed with a gentle sleep: I always gave the same advice to others, nor did they ever repent of having followed my advice. We observe the same diversity of milk in cows immediately after delivery.

Whence it is at the same time evident, new-born children who have not an opportunity of sucking their mother's, stand the more in need of being gently purged, that the *primæ viæ* may be cleansed; except it should be their fortune to have a woman just

y Medic. essays & observat. Tom. II. artic. 11. sect. 13. pag. 242.

just brought to bed for their nurse; which happens but very seldom. Wherefore when I chose nurses for princes just born, I always preferred the woman that had the thinnest and most diluted milk; though such milk is, generally speaking, censured: I at the same time observed, that such milk afterwards acquires greater consistence by degrees. Nor do I apprehend any danger from the thin sort of milk: but if a strong child should be afterwards thought to have occasion for a thicker sort of milk, a new nurse may be substituted in the place of the first.

S E C T. MCCCXLIII.

BUT external applications, somewhat aromatic and spirituous, are of great service in washing away this load of pituitous matter.

It is customary sometimes to cover the abdomen with aromatic applications of a mild nature, lest the skin being red, and as it were, affected with St. Anthony's fire, should be too much irritated. They are useful chiefly when the new-born children are weak, and all their motions appear to be faint and languid. There is reason to hope, that by the stimulation of these, the strength of the ventricle and intestines may be increased, and so that glutinous load forced out. Prescriptions of such applications are to be found in the *Materia Medica* at this article; according to which directions, others of a similar nature may be composed. Some for the same purpose, apply plasters with mild aromatics, such as ceratum, *Galen's* stomachic, and others of a like nature. But a better effect is expected from those which have been recommended in the preceding paragraph.

S E C T. MCCCXLIV.

WOMEN in labour suffer a great deal by the excrements not being soon enough forced out, either on account of the foetus's weakness, the hardness of the matter, it's too great quantity, or the dryness of the passage.

In a mature foetus near it's birth, there is found a feculent, black matter, or a matter of a colour between black and green, which is tenacious and viscid, and which generally fills the whole tract of the great guts as far as the extremity of the rectum. This excrementitious matter shines, and as in it's colour and tenaciousness, it resembles the thickened juice of poppies, called opium in the shops; hence it is by the antient Greek physicians called *μηκώνιον*, in Latin it is usually rendered by the word *papaverculum*. This excrementitious matter being accumulated in the intestines of the foetus, irritates the fibres, creates pain and a tenesmus; whence at the time of delivery, the restless child excites pains in it's mother, or increases those which she has already; when the child being born, has breathed some time, this black, excrementitious matter generally comes out by the anus; not indeed all at once, but generally a pretty large quantity.

For as the foetus swallows it's own spittle, and in it's mouth, gullet and ventricle, collects the filth separated in the intestines, which are daubed with the same, receives the bile and other humours which flow in, and all these deposit certain sediments, such matter is accumulated in the great guts, from the collection of these. If the foetus, at the same time, swallows the liquor contained in the amnion, which appears highly probable to many^z; then the feculent remains

^z Vide instit. medic. Boerh. sect. 632, 683.

mains of this, may increase the quantity of the excrements. The quantity of the excrements is usually such, that the great guts are sufficient to contain it : for the excrementitious matter is seldom found in the small guts. The black filth accumulated during several months, should come out of the body, that the new-born child may continue in health, and frequently part of it comes out by the anus as soon as it is born. But if the child should be languid and weak, then this evacuation happens later : if the excrements be hard, they will be with difficulty forced out by the efforts of the child : this however happens but seldom ; but they rather stick to the sides of the intestines, with a troublesome glutinous quality ; for such is their tenaciousness, that they are with difficulty washed from the posteriors and the thighs, and stain the sheets with spots which are not easily got out.

If a great quantity of excrements should remain in the intestines, a longer time is required for the evacuation ; for, as I said before, all the excrements are not forced out at once.

It is well known that the cavity of the intestines is naturally slippery and moist, and that the intestines above all, are daubed with a copious matter, that they may be the better able to transmit the hard excrements : but it is observed, that the intestines contain the more glands, and the more filth, the nearer they are to their extremity^a. For this reason, there sticks so great a quantity of fat to the anus, that the neighbouring parts may give way to the excrements which distend the rectum, and all be lubricated. If that filth or fat be wanting, the child will continue costive a long time. But this dryness is seldom observed in new-born children, whose whole body is soft, moist and full of juice.

S E C T.

S E C T. MCCCXLV.

HENCE there follow from it's delay, the air having already had access, acrimony, sourness, putrefaction, a dissolution into vapours, and consequently gripes, convulsions, qualms, vomiting, sobbing, coughs, sneezings, screaming, tears, watchings, terrors, fevers, leanness, death.

No one can make it a doubt that the excrementitious matter, which is of no use to the body, and which distends and loads the intestines in which it is held, should be driven out of the body. Immediately after birth, nature itself spontaneously tries this evacuation, if nothing opposes it.

For as long as the child remains in it's mother's womb, no air can enter the cavities of the ventricle or intestines. It was often said before, that the extravasated humours gathered in the cavities of the body, remain unchanged for months together, and when upon being taken out, they are exposed to the free access of the air, they quickly rot, and diffuse a most nauseous smell on every side. In the chapter upon dropsies, there occur many such particulars, which prove this to a demonstration. The same thing is to be apprehended from the excrements, if they do not quickly leave the body. I have sometimes observed, that the excrements which are voided immediately after birth, have not a bad smell; but if they be a few hours left upon the sheets, then they exhale somewhat acid, or something of a putrid nature, according as they are disposed this way or that. For every thing feculent, that is, collected in the intestines of the foetus from either bile, the gastric or pancreatic juice, &c. being animal product, tends rather to corruption. It has been said
before,

before, that it is highly probable, that during the last months of pregnancy, some milk comes to the foetus, which is then pretty well grown. The milk however grows sour of it's own accord; yet that part which constitutes the milk, namely, the cheese, grows stale, if it be fat; otherwise it inclines to the animal nature, and grows stiff like horn, if brought near the fire; and if it be burned, it diffuses such a smell as the horns and hoofs of animals whilst they are burned.

It appeared before, in the chapter concerning belching and wind, sect. 646 and 647, that putrefying and fomenting humours, furnish matter for belching and wind. If the air, being disengaged from these humours, should distend the ventricle and intestines, and wander freely through them, it is either forced out upwards by belches, or downwards by winds. But if there should be some irritating, sharp matter, by means of which, the fibres being bound by a convulsion, obstruct the free passage of the flatulent matter, then the closing membranes are stretched and pulled asunder; whence arise intolerable pains and uneasiness, which soon cease upon breaking wind, and return again, if the cause of these disorders be not removed. But if inflammation and fever be added to them, even in robust and adult men, intolerable pains ensue, and frequently death itself.

The reason is therefore obvious, why gripes and pains are occasioned by a retention of the foetus's excrements; which disorders, the wretched creatures give proofs of by the restless and perpetual tossings of their bodies, by cries and tears; though as they scarce ever shed tears before, the first month of their age is elapsed, they may be said rather to cry than to weep.

But if, as has been said in sect. 1341, so many ills might be occasioned by nothing, but the glue irritating the first ways by it's bulk, how much more are they

they to be apprehended, whilst the excrements of a pitchy tenacity, being too long retained, acquire an acrimony from the free access of the air, and irritate the places to which they stick.

New-born children, when they are well, are almost always asleep; but if they feel pain, they are wakeful; when the pain ceases upon their breaking wind, they soon go to sleep; the pain returning, they leap up, as it were, terrified; violent and universal convulsions follow, and these sometimes quickly prove mortal. If they survive these, they are soon emaciated, if the excrements are not forced out; in-somuch that I have known some who were fat at their birth, become lean in the space of three days. Nor is this surprizing: whilst they were in the mother's womb, they had perpetual and uninterrupted nourishment; afterwards, qualms and vomiting prevent their taking in any food; and if they take in any, it is not digested but corrupted; whence the vitiated load in the bowels will be increased. Sleep, which is so great a refreshment to children, is either quite banished, or is constantly interrupted by pains, when it should be almost perpetual: the pain itself, consumes their strength; whence death quickly follows. Daily observations shew, that from this cause alone, many children perish at their entrance into life.

Hippocrates^b has enumerated vomitings, coughs, watchings and terrors, amongst the disorders of new-born infants. But that the irritating of one of the great guts, may occasion a cough, we learn from a very extraordinary observation of the celebrated *Alpinus*^c, concerning a soldier, in whom the gut colon being wounded, was cured in such a manner, that the tract of the belly and the intestine, had one scar through the whole circuit of it's border: whence the internal surface of the intestine, not only appeared to the eyes, but being inverted, was sometimes thrust out.

^b Aphor. 24. sect. 3. charter. Tom. IX. pag. 119.

^c Academ. annotat. lib. 2. cap. 8. pag. 34.

out. If a coolish air came to the internal surface of the intestine, there immediately followed a cough, which did not cease till the intestine again grew warm.

S E C T. MCCCXLVI.

THE expelling force, when languid, is to be excited by a gentle stimulating purge, a gentle suppository, or mild and sweet cordials.

The expelling force is known to be languid, if the child makes no efforts towards an evacuation by stool, or very weak ones only. It is obvious enough, that there is then occasion for a gentle stimulating purge: rhubarb, and all the preparations of it which are made in the shops, are alone sufficient: for the tender body of the new-born infant, cannot bear the sharper stimulation of purging draughts, without danger of convulsions: *Syrupus cichorii cum rheo, syr. ros. solut. simplex mannae, cassiae fistulae pulpa*: “The
“ syrup of succory with rhubarb, syrup of roses, a
“ simple solution of manna, the pith of cassia
“ fistula,” are the chief remedies used by physicians in this case. Many such prescriptions are to be met with in the *Materia Medica* at this article.

Suppositories are used for the same purpose, which either by their bulk, or the addition of a gentle stimulating quality, slightly irritate the extremity of the intestinum rectum; whence the tenesmus arises, and thus the retained excrements are voided. The tallow of candles formed into a globe or little cone, acts by it's bulk: little globes of sugar, which are usually prepared of the seed of fennel covered over with sugar, besides their bulk, have the gentle stimulating quality of sugar, melting insensibly, which is still more efficacious in suppositories that are made
of

of boiled honey or Venetian soap; concerning which, see the *Materia Medica* at this article.

Of whatever ingredients these suppositories are composed, they are anointed with oil, that being slippery, they may be pushed up the anus without any force. They are left in till they come out with the excrements, which generally happens speedily enough. If they stay in longer, they are dissolved by degrees; and if they have any thing of a stimulating nature at the same time, the effort to evacuate by stool is excited by this; if this effect should not be produced by the bulk of the suppository alone.

Agreeable cordials are recommended in case the child should be weak; these by a gentle, stimulating quality, rouse the suspended actions of the ventricle and intestines. Prescriptions of these are to be met with in the *Materia Medica*.

All the excrements are known to have come out, if what is voided by stool changes it's colour; for it is then, generally speaking, yellow, or of a colour between white and yellow; and if it is left upon the sheets, frequently assumes a green hue in the space of a few hours. Sometimes likewise, a green bilious matter, is voided by stool after the excrements have come out: for *Monro* has admirably remarked^d, that the gall-bladder in new-born children, generally swells with sour, green bile; because through the difficulty of breathing, and the glue which smears the sides of the intestines, it could not so easily run into the intestines.

This is the reason why the gripes continue after the child's excrements are voided, on account of the quantity of bile passing through the intestines; which being evacuated, they are better: hence the use of such remedies is continued, till the soft, yellow excrements, are voided without any pains being felt. For it is better that in young children, the belly

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should

^a Medic. essays & observat. Tom. II. artic. 2. sect. 13. pag. 243.

should be relaxed, than too much bound. This is likewise confirmed by *Hippocrates* ^e, where he says *Quibus copiose profluit alvus, & belle concoquunt, illi meliore sanitate fruuntur*: “Those who have copious
“ evacuations, and who digest well, enjoy the best
“ state of health.”

S E C T. MCCCXLVII.

THE hardness of the matter is corrected by a draught of the serum of fresh milk, diluted with a little honey, or a clyster of the serum of milk mixt with soap or honey.

The child's excrements are seldom hard; but rather their pitchy tenaciousness, makes them come out by stool with difficulty: but if they stick too long, they may grow hard: yet the excrements which might corrupt too soon, an acrimony being occasioned by delay, will have worse consequences, as has been said in sect. 1345.

That first mother's milk, which was before recommended, will easily remedy the too great hardness of the excrements, and at the same time, will diminish their tenaciousness by the diluting force.

If the child should not suck it's mother, a little of the serum of milk sweetened with honey, is generally given it, (see the *Materia Medica* at this article :) this is easily taken by the new-born children. Clysters of the serum of milk, with a little honey and Venetian soap, are of great use; as the excrements being gathered, stick chiefly in the great guts; and thus may be easily washed out. It will be sufficient if an ounce or half an ounce, of such serum of milk be thrown in, and with but little force, lest the tender intestines should be injured thereby. For it is safer to repeat such a clyster, if there should be occasion

^e De dentitione, num. 4. charter. Tom. VII pag. 871.

tion, than to make use of too great a quantity at once.

S E C T. MCCCXLVIII.

THE intestines are lubricated, by taking oil of cotton, olives, sweet almonds, &c. and likewise by the injection of clysters of the like nature, and ointments like them.

All pressed oils lubricate, are a remedy against the dryness of the intestines, daub their sides, and weaken all acrimony of whatever sort, by wrapping it up; for this reason, as it is well known, soft, fresh oils, taken as well from the vegetable as the animal class, are so much recommended when sharp poisons have been taken. Therefore when the excrements become sour, and occasion gripes, by irritating the intestines, (Sect. 1345) these may be of service. Care should however be taken not to give these in too great a quantity, or for a long time. For they diminish the strength of the solid parts, and if they continue a long time in the ventricle and intestines, they grow rancid, and occasion a very pernicious acrimony: even in strong and robust men, it is observed, that if at dinner they eat a great deal of fat meat, they in the evening belch up nothing but oil; but it is at that time so sour, that it parches the jaws and gullet, and even almost choaks them up. This is the reason why there is only a small quantity of soft oils prescribed in the *Materia Medica* at this article, and that syrups are mixed with them, that by the saponaceous virtue of sugar, that oil may be rendered capable of mixing with the aqueous humours, and so prevented from sticking a long time to the hollow surface of the intestines. For the same reason, to the oil of cotton, added the yolk of an egg and mercurial honey, whilst new-born children are injected with a sort of a

X 2

clyster,

clyster, and at the same time, advice is given, that such a clyster should be repeated every day, till the parts are properly lubricated. But this end being answered, it is best to discontinue them.

Anointing the body with soft ointments, has likewise been recommended, yet this cannot so directly conduce to lubricating the intestines.

Fissot has observed ^f, that pressed oils given to new-born children, have sometimes very speedily allayed the gripes; but that they soon after returned more frequently, if the use of oils was continued. He cured some without administering any remedy, by forbidding the use of oil.

S E C T. MCCCXLIX.

BY what method, and by what medicines that variety of bad symptoms sprung from this cause, (sect. 1345) may be most happily surmounted.

The first ways are in new-born children everywhere stopped up with slimy dregs, which gives rise to a great many disorders, as has been said: the great guts hold a quantity of tenacious excrements; which loads, distends, and, being made sour by delay, irritates. But if these are brought out of the body, the ventricle and intestines are cleansed, and become fit to receive, retain and change such food, as is requisite to nourish the new-born child, and make him grow. Whence it appears, that this method, and these remedies, are sufficient to overcome the disorders above enumerated.

S E C T.

S E C T. MCCCL.

ALKALINE remedies are useful here, if ever, and amongst these, chiefly those of an absorbing nature.

When the breasts are offered to a new-born child, or pap made of milk, meal, bread, &c. and all these degenerate from their own nature into an acid acrimony; the reason is obvious, why alkalines are upon this occasion made choice of, and of them, chiefly those of an absorbing nature, because they effectually subdue the acid, but at the same time, have no acrimony. See what has been said in sect. 66, where spontaneous disorders, proceeding from an acid humour, were treated of.

S E C T. MCCCLI.

RECOURSE should be had to opiates but rarely, and that with the greatest caution imaginable.

There has obtained in many places amongst the lower class of people, a pernicious custom of administering opiates, whilst infants testify their pain by piteous cries: in this manner indeed, the sense of pain is deadened; but the cause which produces pain, continues to act, and may destroy the tender body of the new-born child. If the intestines should be torn by the excrements retained, and become incurable, their expulsion ought to be promoted, as has been said: if such disorders should be occasioned by an acid acrimony, that may be safely corrected by absorbing remedies. But as a relaxed belly is an advantage in this first stage of life, in order to evacuate the excrements, and drive out the bile collected in

too great a quantity, and sometimes grown sour, operates are pernicious, as they are of an astringent quality. Whence it is evident, that such remedies cannot have place upon this occasion; or if during the continual cries, they should want something to give them ease, things of the mildest nature should be made use of. *Syr. fl. rhocados*, *syr. diacodii*, and things of this kind, which are to be met with in all the shops, diluted with water, and administered by sparing doses, and at several different times, till they produce soft repose may be born; things of a stronger nature are always pernicious. Mercenary nurses and those who attend children, frequently give them these things privately, and as they in a short time produce no effect except the dose be increased, they sometimes presumptuously go on to a considerable quantity; and the unhappy creatures are so used to these, that for a long time afterwards they cannot do without them; so that I have seen them live quite stupid and besotted to the third or fourth year of their age. However in most of them these ills subsided: they grew up.

S E C T. MCCCLII.

EVERY thing of too attenuating, stimulating, and volatile a nature, is to be avoided.

In the mother's womb, the foetus lived upon the kindly humours of a mother in good health, and grew, and as was said before, is hurt, if the pregnant woman should indulge herself in the use of strong meat, liquors or sauces. As soon as the child is born, the soft mother's milk is destined to its use. The tender bowels of new-born children, can bear nothing of a sour irritating nature; hence all wise physicians, when they treat children's disorders, beware of these; which shews how much those women

are in fault who endeavour to procure children sleep, by giving them warm opiate compositions. They pour treacle, mithridate, and other aromatic medicines down the throats of the wretches, even against their will: in many places a composition is much used, which in the shops is called, *Electuarium seu requies Nicolai*: “The electuary or repose of *Nicolaus*,” and from it’s effect, *Requies puerorum*: “The repose of children.” That electuary, besides a pretty large quantity of opium, contains nutmeg, cinnamon and ginger. Nay, I have seen them administer a hot electuary, called in the shops *Philonium Romanum*; which, besides a very considerable quantity of opium, contains pepper, and the igneous root of *Spanish* pellitory: this composition is so warm, that it almost inflames the jaws whilst it is swallowed.

After the oily volatile salt of Sylvius had grown famous, it was almost looked upon as an universal remedy, as he derived the causes of almost all diseases from an acid. Besides, as there is so often an acid acrimony in the ventricle and intestines of children, and it produces many disorders; hence that sharp remedy, which consists of volatile alkaline salts, and the warmest aromatic oils has been given to children. But if the steam of that remedy should affect the nostrils of a robust man in perfect health, almost his whole body is torn. How great reason then, is their for fear, whilst such a steam, rendered more active by the warmth of the body, wanders over the ventricle and intestines of a tender infant. The acid indeed subdues this remedy, and it being united with the acid, is converted into a salt of a middle nature, and mild; but it’s sharp, stimulating quality, is pernicious, till this is effected.

This is the reason why wise physicians have chosen rather to use absorbing remedies, to subdue the acids which stay in the first ways of children’s bodies, and why they have ever preferred them to fixed alkaline

salts; though these stimulate less than volatile, alkaline salts. For all those, if they do not meet with the acid, or even before they are united with it, may hurt by their own acrimony. But absorbing remedies are mild, and have no acrimony.

S E C T. MCCCLIII.

BUT to every particular disorder (§. 1345.) a remedy is easily found, the history of the cause and cure of all the disorders hitherto described, being known.

All those disorders which have been enumerated in sect. 1345, are generally happily removed, when the cause is removed; that is, whilst the excrements are forced out, and the ventricle and intestines are disengaged from the tough glues. In the mean time, it may happen, that after a long stay of the excrements, now become sour, the intestines may be injured, and therefore even after the expulsion of the excrements, some of these bad symptoms may remain: for example, the intestines may be inflamed, and the ventricle so irritated by continual vomiting, that qualms and a vomiting may continue. But then such a cure of all these disorders is necessary, as was determined upon before, whilst all these disorders were treated of: attention being always given to the tender age of the patient, which can bear only the gentlest remedies.

Hence likewise, the reason is plain, why all things should be guarded against which may strongly and suddenly affect the organs in new-born children. Wherefore *Moschion* * has wisely advised, that new-born children should lie in: *Loco mediocriter calido, non valde lucido, sic ut nullus ibi odor sit*: “ In a place
“ moderately warm, and not very lightsome, so that
“ there

* Spach. gynæceor. pag. 7. No. 69.

“there should be no stench there.” Thus we imitate provident nature, which in new-born children has fortified the eye with a thin membrane drawn over it^h, lest too strong a light should hurt it. The same caution is likewise observed with regard to the organ of hearing, partly by the membrane which closes it, partly because the passage of the hearing is extremely short, and is afterwards to be lengthened by degrees. So that the health of princes is but ill consulted, whilst they are exposed to general view in lightsome apartments, and great guns are fired within their hearing, &c. If I could not entirely alter this pernicious custom, yet it was in my power so to correct it, that it could scarce do any further hurt.

The soft body of a new-born child and it's bones, almost of the flexibility of wax, should be cautiously handled, lest there should be caused any deformity in the limbs, which it would be afterwards hard to correct. However, the whole care of this matter is generally committed to women who bind the limbs with bandages, and manage them as they think proper; and treat the best advice of physicians and surgeons with contempt, which often gives occasion to great disorders in the unhappy children.

*Moschion*ⁱ has cautiously directed, that new-born children should be laid in a bed not very soft, but moderately so; for he was apprehensive that the back-bone or the neck might be distorted, if the clothes were too much pressed down by the weight of the body.

The foetus in the mother's womb being immersed in the soft liquor of the amnion, could move all it's limbs freely; but no sooner is it born, but it is so confined with bandage, that it is deprived of motion. It will not do any hurt to wrap the body and the limbs with a soft bandage not bound very tight, that the child may be handled by the nurses and attendants,
carried

^h Albin. annotat academ. lib. 1. pag. 33.
citato.

ⁱ In loco modo

carried from place to place, and brought close to the breasts. *Moschion*^k has said, with regard to the time the bandages should be used, that some have fixed it at forty days, others at sixty; but that his opinion was, that bandages are of service, till the whole corporeal frame becomes firm, which happens more early in the robust, more slowly in the weak.

Therefore the chief, nay the only use of bandages, is, to defend the infant from the cold air, and to prevent it's being hurt by a rude touch, as well as by the friction of parts against each other. For which reason, the limbs are wrapped round with soft linen, that all rubbing against them may be avoided. But the pernicious custom has too much obtained of keeping the limbs immoveable, and stretched out in length by bandages, and so forcing the wretched creatures to lie down in a posture, which would be insupportable even to robust men, and to men in health. It was before said, when the manner of lying down in disorders was treated of, that that posture is looked upon as the best, which is always chosen by persons in health whilst they sleep, who never sleep with their legs stretched out in length, but half bent, whilst with a silent, voluntary motion, during sleep, the bending muscles prevail over the extending ones, and gently bend the joints. The foolish women that attend children do their utmost to prevent the bending of the joints, stretch the arms and elbows straight out, bind them strongly with a bandage, bring them near the sides of the body, and pull them backwards, they manage the lower limbs in the same manner, by hindering all bending of the knees; thus they with great boasting, shew the unhappy child, wrapt up with bandages like a mummy, and motionless, to it's mother and all present.

The women themselves are surpris'd, that the child who cries in a piteous manner, whilst wrapped up

^k Spach. gynæc. pag. 10. No. 107, 108, & harmon. gynæc. part 1. cap. 21, pag. 17.

up in the bandages, is immediately quiet as soon as it has free liberty to move it's limbs, upon the loosening of these chains. But I could not even, by the evidence of this experiment, prevail upon some of the more obstinate among them, to let the children's limbs be more at liberty. On the first six weeks after birth, I constantly attended the offspring of princes twice a day, whilst the bandages were applied; and if I did not plainly perceive that all the limbs could be easily moved, I immediately caused the whole apparatus of bandages to be removed, though the women who are to be over-ruled, not by advice, but authority, murmured ever so loudly. At the same time, I took care to inculcate it into the midwives, who, according to custom, apply the first bandages to new-born children, not to bind their limbs too strongly. Thus I at last made some of them grow wise.

There does not appear to be any reason for apprehending ill consequences from the looseness of the bandages; the foetus floats freely in it's mother's womb; it moves it's limbs with force, and kicks. There are whole nations that never use any bandages, but only defend the children from the inclemency of the air by a slight covering. The *Europeans* notwithstanding, are surpris'd at the strength and agility of these men¹; and there is seldom any personal deformity observed in them.

Particular care should be taken not to press the head hard in new-born children; for nothing is more dangerous. We meet with excellent advice^m to this purpose, *Caput pannis aut lanis mundis contegatur*: "The head should be covered with linen or clean woollen." Whilst in the same chapter, the bandages which are to be wrapt round the rest of the body are treated of, no mention is made of any ligation
ture

¹ Hist. natur. gener. & particul. avec. la descript. du cabinet du roy, Tom. II. pag. 457.
part 1: cap. 21. pag. 17.

^m Spach. harmon. gynæc.

ture of the head ; and indeed with good reason ; as the bones of the head are soft, only united to each other by membranes, so that an external pressure intervening, they can easily mount above each other, and so compress the brain, the cavity of the skull being diminished. A soft cap put loosely upon the head, is sufficient. In those who have lived in a state of idiotism from their birth, the shape of the skull is generally found to be irregular.

Besides, the hard binding of the bandages is hurtful, as it obstructs the free motion of the thorax necessary for respiration, and presses the last spurious ribs inwards ; whence many ill consequences may follow. Whilst at the same time the abdominal viscera are compressed from the same cause, the ventricle can neither receive a proper quantity of milk, nor retain it when received ; whence there usually follow a frequent pouring back of the milk, and a troublesome vomiting ; as *Mauriceau* had admirably observedⁿ.

But as the foetus hanging in the mother's womb from the navel-string, is easily shook this way and that, whilst the mother moves her body ; hence it has been not without reason believed, that new-born children delight in such an oscillatory motion, as it were ; for which reason they laid children upon cradles that they might enjoy this gentle exercise, and be more and more strengthened. Daily experience teaches us that the worst tempered children are soothed by this gentle motion, and at last sink into a sweet sleep. But it is requisite that that shaking of the cradle should be gentle and equable. For which reason, *Moschion*^o has said : *Cunæ, vel pensiles sint, vel pedibus spondisve suis infra supraque ita fabricatis, ut facillime in utrumque latus moveantur* : “ Let the
“ cradles either hang by cords, or have their feet
“ and sides so contrived above and below, as to be
“ easily

ⁿ Traite de malad. des femme, grosses, Tom. I. liv. 3. chap. 37. pag. 506.

^o Spach. gynæc. pag. 9. No. 104.

“ easily moved to either side.” The cradles that hang by cords are the best of all, as they may by a slight force be moved equably, and without any noise. At the same time the motion communicated to these cradles, is imperceptibly diminished, and at last ceases without any concussion.

S E C T. MCCCLIV.

THEY suffer a great deal by the milk itself, whilst that being too quickly, and too strongly coagulated in the stomach, is compressed into one heady and four mafs.

As soon as a child is born, the navel-string being cut, all the connection which it before had with the mother, is removed ; but after a fast of a few hours, that the first ways may be the better cleansed, as was said, there is occasion for food ; and that this might be ready, provident nature has prepared a thin serous, cleansing milk in the mother's breasts. Nothing can therefore be more natural or more beneficial for the child, than that it should be nourished with the milk of it's own mother. In the womb, it had it's nourishment and growth from the mother's humours ; nay, it seems very probable, that on the last months of pregnancy, as was said before, the milk was carried to the womb and the foetus. If in grown men, and men in health, a sudden change in the manner of living, is not without danger ; it is evident, that there is great reason to fear, lest a new-born child should be hurt by an improper nourishment, and decline in health. But as breasts were given not only to women, but four-footed beasts, in so much the greater number, as they are used to bear a greater number of young, that all may have their food ready, as soon as they are born ; it appears evidently to be the design of nature, that new-born children

dren should be nourished by their mother's milk, till their bodily strength increasing, and their teeth being grown, they may be able too take more substantial food, which may require a greater effort of digestion, and convert it to their own use. But a wise physician will never depart from the law of nature, but for great and weighty reasons.

It is true indeed that the milk grows sour of its own accord, is coagulated in the ventricle, becomes still sourer by delay, and that many disorders take their rise from thence, of which we are now to treat; for this reason, some seem to have looked upon milk as an unfit nourishment, and have recommended some other sort of food for new-born children. But if the strength of the viscera, that make the chyle, be so languid, that they should not be able to digest the milk already prepared and subdued in the mother's body, can it be hoped that other food can be digested, which varies more from the nature of healthy humours than the milk itself; this certainly seems by no means probable. The milk before it is gathered in the breasts, had undergone the action of all the vessels and viscera of the human body, as it run through the vessels, nay now makes a near approach to the nature of human humours. No art can cause such a previous change in the food which is given to children, as is effected in the milk by nature. It is justly inferred from hence, that milk is the properest nourishment for infants. For those disorders which are observed to arise from the milk's not being well digested, may be guarded against, and if they should take place, it is not hard to correct them, as will appear from what follows.

Helmontius P, though he condemned the use of milk, and enumerated many ills which spring from it, said notwithstanding, *Natura destinavit lac in uberibus pro cibo & potu infantuli, quod ipsi alimentum commune*

P In capitulo : infantis nutritio ad vitam longam, pag. 622, & eq.

commune cum brutis cessit : “ Nature intended the milk
 “ in the breasts for the meat and drink of the infant,
 “ which food has fallen to it’s lot, as well as to that
 “ of the brutes.” But he for that reason, seems to
 have set the less value upon milk : *Natura regitur di-*
gito Dei. Ita est. Lac ergo ut alimentum ordinariū,
ad vivendum sufficienter prebuit ; non autem ut vitæ
longæ inserviret. Non enim natura amplius de vita
longa est meditata, postquam novit, auctorem suum vitam
accurtasse, nec velle unumquemque longævum. Lac au-
tem unicuique in cibum dedit ex æquo ; etenim morborum
exercitum ; ut mille mortis præcociates ad vitæ funda-
menta vergerent in ruinam. Natura ergo per lac satis
dat finibus sui auctoris, deditque alimentum belluinum :
 “ Nature is governed by the finger of God. This
 “ is so. It has therefore given a sufficient quantity
 “ of milk as ordinary food for the preservation of
 “ life ; but not to serve for protracting life. For na-
 “ ture no longer was solicitous about long life, when
 “ she knew her author had shortened life, and did
 “ not chuse that every one should live to a great
 “ age. For she gave every one equally milk as his
 “ food ; and also a multitude of diseases ; that many
 “ fore-runners of death, should at life’s foundations,
 “ tend to ruin. Nature therefore by the milk, ful-
 “ fils the purposes of it’s author, and gave a brute’s
 “ food.” But when he indulged visionary notions
 about protracting life by his medicines, he required
 people to take, *Quotidie bis de die guttas quatuor de*
arbore vitæ : “ Twice every day, four drops of the
 “ tree of life :” for this reason he likewise condemns
 milk : *Quod medicamen ad vitam longam, ut a cunis*
quotidie guttatim porrigitur, ad vitam longam et sanam,
non potest digeri, ut neque penetrare, si intra crassos lac-
tis grumos sepeliatur. Ut pote sic etiam venena in lacte
propemodum innocua evadunt & velut castrata sterilef-
cunt : “ Because being intended to protract life, as
 “ from the cradle it is given drop by drop, in order
 “ to produce long and healthy life, it cannot be di-
 “ gested,

“gested, nor even penetrate, if it be buried amongst
 “the thick lumps of milk. Inasmuch as in this man-
 “ner, poisons become innocent, and being rendered
 “weak, prove of no effect.”

But what food has he substituted in the place of milk, which he has condemned? “*Laudo per puerum nostro alimenta, quæ pane tantisper in tenui cerevisia bullito, cum melle despumato, sin minus cum saccharo instituuntur, donec simul in mucilaginis aut collæ speciem, sive gelatinam, devenerint*: “For a child, I recommend such aliments as are made of bread boiled in
 “a little mild beer, with clarified honey, or else
 “with sugar, till they turn into a sort of jelly.” It is well known however, that bread boiled with beer, soon grows sour, and that to a great degree; indeed not one who understands the functions of the body, will prefer such thick pap, to milk which is sucked from the breasts.

Hence it is observed, that but few follow the paradoxical opinion of *Helmontius*, who entirely condemned all milk, as well that of human creatures, as of other animals. Wise men, with reason enough, laugh at the chymists idle stories about protracting life, nor will they debar new-born children the use of milk, lest by it's softness, the efficacy of the *Ens Cædrinum* or the *Arbor Vitæ*, should be impaired.

Other excellent men, for whom I have a great veneration, have thought better of the milk, and have acknowledged it's utility, but they preferred the milk of other animals to human milk; and they endeavour to support their opinion by specious arguments.

They indeed acknowledge, that sacred and profane history testify, that queens and women of the first quality, gave suck to their own children⁹. Nay, they declare, that it would be an impiety not to obey this natural law. But these early ages were recommended by their innocence, and daughters imbibed
 virtuous

⁹ Vander monde sur la maniere de perfectioner l'espece humaine, Tom. II. chap. 5.

Virtuous principles with their mother's milk. In this our age, vices prevail, and children suck in the seeds of crimes and diseases with their mother's milk. One author therefore wishes^r, that princes would interpose their authority to prevent mothers from giving suck to their children. Physicians should never cease to be earnest in their exhortations, whilst they with patience wait for such happy times.

In my opinion, we should have a more favourable opinion of the present age; let vices abound ever so much, there are not wanting examples of virtue. The crime of parricide stained the early infancy of the world: fifteen ages being elapsed since the creation, vices had increased to such a degree, that the divine wrath, slow to vengeance, destroyed the whole race by the waters of the deluge, none being preserved but *Noah*, a just and perfect man, with his family. These first ages were doubtless worse than ours. *For all flesh had corrupted his way upon the earth*^s.

Nor can I easily be induced to believe that the milk has any influence upon the manners of men. I am not however ignorant that many stories have been told upon this subject. What a diversity of manners was there in the brothers *Cain* and *Abel*! yet they were born of the same parents, and sucked the same breasts. Who can believe that the ferocious *Cain*, sucked anger, envy, and cruelty, with his milk from the breasts of the mother of human race? Daily observations shew, that brothers born of the same parents, and nourished with the same milk, have been very different in their moral character. If it be true (which I however call in question) that in *Moscovy* and *Iceland*^t, mothers never give their children suck; does it appear that vice prevails less there than elsewhere. The heifer that grows up to be a

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^r Brouzet sur l'educat. medic. des enfans, Tom. I. chap. 5. pag. 165.

^s Genes. cap. 6.

^t Brouzet. sur

education med. chap. 5. pag. 169.

fierce bull, sucked milk of the same mild nature with its sister cows. When scrupulous parents would have turned off a nurse who was in perfect health, only because she seemed to be somewhat dull; an old physician said, laughing, that the nurse must doubtless have better intellects than a cow, with whose milk they proposed to nourish their child. How little influence the milk has upon the morals, an excellent author proves by his own example^u. For he acknowledges that he was for eighteen months fed with the milk of a drunken nurse, without his health or strength being any way impaired. Nor does the excellent treatise which he wrote concerning the medical education of children, discover any traces of this vice.

Ought not those who condemn human milk, as the cause both of mental and corporeal diseases, be apprehensive of the stupidity of the ass, or salaciousness and restless motion of the body, when asses or goats milk is made use of in bringing up children^x.

If the milk of animals is of service in curing the most dangerous diseases, human milk would prove much more beneficial. See what has been said in sect. 281, as likewise what has been said in sect. 1211, concerning the cure of a consumption. It was there observed, that the warm milk strained out of the breasts, whilst it is exposed to the air, sends forth a steam of a tolerably agreeable smell, which is immediately diffused into the air, and is not without reason, thought to proceed from the most subtle and elaborate fluid, prepared in the mother's body. All that quickly vanishes, whilst the milk is exposed to the air; wherefore nature has providently caused the milk to pass immediately into the stomach of the child, without any loss of that subtle vapour.

Another

^u Brouzet sur l'education medic. pag. 175, in notis.

^x Vander monde sur la perfect. de l'espece humaine, chap. 5. pag. 88.

Another argument which has been alledged against giving suck to children, is, that women who give suck, are generally barren; and according to this opinion, the number of the human species would be increased, if the custom of giving suck was entirely abolished: a celebrated author has maintained γ , that two thirds of the time, during which, women are capable of child-bearing, is entirely lost, whilst they nurse children. But this opinion seems to be repugnant to authentic and daily observations. I have known many women, who have every year been happily delivered, though they nursed children. I knew a noble matron, who had born eighteen children, who gave suck to them all, and when she rose the last time from child-bed, had lost nothing of her beauty, but seemed rather to be the sister than the mother of her daughters. I observe in *Austria* a great fruitfulness amongst the women, even amongst the lower sort, who are not able to be at the expence of a nurse, and who think it much easier to give suck to their children, than to prepare any other sort of food at an unseasonable time of night. I have heard many complain that they had born children but six or eight times, being firmly persuaded that something noxious left the body at every delivery; and if this did not happen, they were apprehensive of soon growing diseased. It is therefore evident, that fruitfulness is not obstructed by giving suck; and I every day see the number of women who give suck, happily increased.

I always represented, and was never sorry for giving such advice; a woman in labour: *Totam interram esse matrem filii sui; quod est enim hoc contra naturam imperfectum atque immediatum matris genus, peperisse & statim abjisse abs sese? aluisse in utero januine, suo nescio quid, quod non videret; non alere nunc suo lacte quod videat; jam viventem, jam hominem, jam matris officia implorantem? an tu quoque inquit, putas*

Y 2

naturam

naturam fæminis mammarum ubera quasi quosdam nævulos venustiores non liberum alendorum, sed ornandi peccatoris, causa dedisse? sic enim, quod a vobis scilicet abest pleneque illæ prodigiosæ mulieres fontem illam sanctissimum corporis, generis humani educatorem, arefacere & extinguere, cum periculo quoque aversi corruptique lactis, laborant, tanquam pulchritudinis sibi insignia devenustent &c. “ That a woman ought to be the entire mother

“ ther of her son; how contrary to nature is this
 “ imperfect sort of mother, this mother by halves
 “ who brings forth, and then casts off her offspring
 “ who after having nourished in her womb, and with
 “ her blood, something which she did not see; does
 “ not now nourish with her milk what she sees living
 “ ing, become a human creature, and imploring
 “ the assistance of it's mother. Do you then, say
 “ he, imagine that nature gave women breasts, like
 “ a sort of beautiful excrescencies to adorn their
 “ chest, and not to nourish children? thus most commonly
 “ those unnatural women endeavour, which you
 “ avoid, to dry up and quench that most sacred
 “ fountain of the body, with the hazard of turning
 “ the milk out of it's course, and corrupting it, although
 “ though it spoiled their beauty, &c.²” A queen
 of France gave her son suck, nor would she desist
 from so doing when taken ill. And as during the
 time of a fit of an intermitting fever, another matron
 gave her breast to the thirsty and crying child, she
 was so much displeased at this, that she thrust her finger
 into the child's mouth in order to excite a vomiting,
 being unwilling that another should perform
 the mother's office³.

But if a mother should not be able to give her child
 suck, on account of a disease, weakness, or any other
 cause, or should be unwilling to do it, then the best
 way is to chuse a nurse for the purpose. The first
 requisite in a nurse, is perfect health; for this reason

for

² Aulii Gellii, noct. attic. lib. 12. cap. 1. pag. 281.

³ Brozet in loco modo citato, pag. 166.

son, the physicians carefully inquire whether any disease can be discovered in them. If the colour of the skin be good, the eyes lively, the gums of a good colour, and firm, the teeth shining and well conditioned, the skin every where unblemished, if no ill smell exhales from the mouth, nostrils or skin, then we may be certain of perfect health. At the same time, the child to whom she gives suck, is examined, whether it be in health, or has acquired it's due growth: for from thence a judgment is formed concerning the good effects of the milk. A prudent and experienced midwife examines all things with care, and if there be found a suspicious scar, pimples, or an evacuation of corrupt humours from the womb or pores, the nurse is justly rejected.

From the twenty-fifth to the thirtieth year, is considered as the best age for a nurse. But I have known nurses of twenty years of age, who were very robust, in perfect health, and who acquitted themselves in this office with great success. The prudence of nurses of a more advanced age has been commended, and perhaps this circumstance ought to be taken into consideration: but nurses do no more than give suck to the children of kings, all other cares are left to women of approved fidelity: amongst private persons, if a nurse is at the same time to take care of the child, such as have born many children are *cæteris paribus*, preferred to those who have born but one, provided they be in the prime of life.

The form of the breasts is approved of, provided they are not flaccid, but tight, elastic, and of a moderate bulk. *Aetius* ^b was apprehensive, lest too great a quantity of milk should be gathered in large breasts, which being corrupted by stagnating, would prove hurtful to the child. But it was before remarked in treating of the diseases of child-bed, that besides the apparatus designed for separating and gathering the milk, there was in the breasts the *Tunica Adiposa*

(the adipose membrane) which if it be much distended with fat, increases the bulk of the breasts, but does not promote the secretion of the milk; on the contrary, rather obstructs it, whilst it compresses the glandular part of the breast with it's bulk. I have often known such great breasts afford but little milk.

The nipples are commended for their red colour, their firmness, and for their rising sufficiently above the disk of the breasts, so that the child may be able to catch them with ease. It is likewise requisite that they should be of a moderate size; for if they should be too big, they would obstruct the motion of the tongue required for deglutition; but if they should be too thin, the child would find it more difficult to hold them in it's mouth; and whilst it attempts to suck, they would easily slip away^c. It is best of all, that upon a slight compression of the breast, especially about the circle of the nipple, the milk should spurt out easily, and to a great distance, as it were, out of a great number of little cocks. But if these cocks should be rather broad, so as to let out the thick milk, as it were through a pipe, *Aetius* thought there was danger of suffocation^d. The age of an nurse he has fixed, so that she should neither be under twenty, nor above forty years old.

It was customary for the nurse not to give suck to the child till four, or even six weeks after delivery; that her secundines might be thoroughly purged off, and that she might be perfectly recovered from the fatigue of child-bearing. *Mauricean*^e acknowledges, that he prefers the milk of the mother herself, and that therefore he rather wishes that the nurse should begin to give the child suck, twelve or fifteen days after delivery. But it is obvious enough, that such an one cannot always be had. For which reason, *Ægineta*^f said, that it is a great advantage for the child

^c Lib. 4. cap. 4. pag. 67, versa.

^d Ibidem.

^e Mauric. traite de malad. des femm. gross. &c. Tom. I. liv. 3. chap. 43. pag. 526.

^f Lib. 1. cap. 2. pag. 2.

child, if the nurse has been delivered a short time before ; and that more especially if her child should be male. I was little solicitous about the sex of the child, provided the nurse was in other respects unexceptionable. Some have been of opinion, that for a boy, a nurse should be chosen who had born a male child, but the reverse should be observed with regard to a child of the other sex.

The milk is known to be good if it diffuses an agreeable odour, if it be white, and of a taste sweet, like that of sugar ; if when mixed with fair water, it is diluted in a most equable manner. It's consistence is praised, when a drop being put upon the nail, does not immediately run quite off upon the finger's being bent ; but some part of it remains upon the surface of the nail : but if it sticks too much to the nail, it is condemned as thick and viscid. It is at the same time praised, if it is not entirely white, but has something of a blueish hue, as if it were partly pellucid.

But authors have prudently advised ^s to chuse a discreet nurse not prone to anger, to which *Aetius* has added, *non epileptica*, not troubled with the falling sickness. It was said before in treating of the falling sickness, that there are sometimes long fits between the intervals of this dreadful disorder, and that in this intermediate time, no symptom of the hidden disorder can be discovered : besides women who are liable to be agitated by violent passions, are often troubled with hysteric complaints. It is obvious that such nurses should be rejected, for authentic observations have shewn, that children who have sucked the breasts of nurses, whilst in a violent passion, have been on a sudden convulsed. Nor will this seem extraordinary, if what has been said in sect. 104, and in other places concerning the surprising changes which are occasioned in the human body by

Y 4

violent

^s *Aetius*, lib. 4. cap. 4. pag. 67, versâ. *Moschion* apud *Spach*. pag. 7. No. 76.

violent and sudden passions, be taken into consideration.

For this reason, several nurses are wisely chosen in courts; these live in the same house, under the protection of a discreet matron, all use the same diet, every day converse with each other, and at the same time give suck to their own offspring, and take care of it. Thus an opportunity is afforded of detecting their defects, both of body and mind, which have escaped notice before. Wherefore *Aetius*^h said: *Divitibus vero præstat, plures habere nutrices*: “It is best for the rich to have several nurses.”

But as it is evident from authentic observations, that the milk separated and gathered in the breasts, has not totally divested itself of the nature of meats and drinks; the reason is obvious, why a choice should be had in the regimen. Wherefore *Aetius* has wisely advisedⁱ to give at a proper time, food of a good juice, in a proper quantity: he directed to abstain from leeks, onions, garlick, salted meats, from things of an ill savour and bad smell, from too great a quantity of preserves, &c.

Nor yet should the food, which the nurse was accustomed to, be changed all at once, as she lived in health, whilst she used it before. Hence *Moschion* has wisely observed, with regard to the diet of nurses^k, that they should be fed: *Communitè, sicut omnes homines, ut sana esse possit*: “In the ordinary way, like other people, in order to be healthy.” Sollicitous mothers often transgress this precept, whilst they set before nurses, dishes prepared with all the refinement of the art of cookery, and press them, when cloyed, to taste the dainties at least, thinking they consult the good of their offspring, whilst they load the ventricle of the nurse. Plenty of food is indeed beneficial for nurses, if their appetite is capable of it, that a proper quantity of milk may be never wanting.

^h *Aetius*, lib. 4. cap. 5.

ⁱ *Ibid.* cap. 6.

^k *Spach. gynæc. pag. 7. No. 77.*

wanting. But a simple diet is best of all, consisting of broths and the flesh of young animals, either roasted or boiled : vegetables are likewise of service, ripe fruits, not acid ; fresh eggs, white food made of milk : rich, fat meats, sour things, things salt and aromatic, are to be avoided : for thus from the food above-mentioned, a quantity of good and benign chyle, will be prepared in the body of a healthy nurse ; which will be abundantly sufficient to support both the nurse and the child. At the same time, a considerable variety of dishes may be prepared out of these ingredients, lest the same repeated every day, should disgust.

Whilst the new-born child begins to suck, it is recommended to nurses to use a more liquid nourishment, by increasing the quantity of broth, and diminishing the quantity of flesh ; if the keen appetite of the nurse requires stronger food, a quantity of thin drink may better dilute the chyle.

However, as the strength of the child increases by slow degrees, stronger meat may be allowed the nurses¹.

The drink chiefly recommended is fair water, as all other drinks prepared by art, such as beer, wine, and the like, are either acid already, or grow acid of their own accord ; and in children, an acid acrimony is dangerous. *Moschion*^m on the first days, allows nothing but water ; afterwards as the child grows up, he allows wine to be mixed with the nurse's ordinary drink. But some allowances should be made on account of the country and custom : it is well known, that in some countries, water is either never, or very seldom drank. If, for example, the nurse has been used to drink beer, she will not be able to bear water, but will decline in health. I never knew beer hurtful to those who were used to it, provided it was mild, fresh and clear from dregs ; above all, unmixed, as it then does not easily grow sour, and is
very

¹ *Moschion* apud *spach*. pag. 7. No. 77.

^m *Ibidem*.

very nourishing. *Aetius*ⁿ, when the nurse's milk begins to fail, directs that she should drink beer or ale; and said: *Eodem die ubera lacte replebuntur. Mulieri autem videbitur, ubi poculum acceperit, omnibus membris languescere & exsolvi donec lac in mammillis collectum fuerit*: "The same day the breasts will be filled with milk. But the woman when she has taken a cup, will seem to languish, and be relaxed in all her limbs, till the milk is gathered in her breasts." But such unmixed beer should not by fermentation have acquired the power of intoxicating: for then it affects the head very much. I have found such beer have an excellent effect upon many nurses; and indeed upon my own wife, who when she gave her children suck, and was for going to bed, took a pint of this beer, which caused her breasts to be full of milk the whole night.

But when nurses use a plentiful diet, if they were to lead a life of sloth and ease, their health would be soon impaired, wherefore all physicians have advised them to use frequent bodily exercise. They have chiefly recommended those exercises, by which the upper parts of the body are most agitated°. For this reason, they have ordered them to busy themselves in kneading meal, in making beds, and in carrying water. Walking in an open, pure and serene air, is highly beneficial. The nurse's mind being at ease and chearful, contributes much to the preservation of her health.

The flowing of the nurse's menses, generally gives rise to great apprehensions; nay, it is customary with some to substitute a new one in her place upon such an occasion. For many ill effects have been ascribed to the monthly evacuations; as was said in the chapter upon the diseases of virgins. *Aetius*^p has declared against giving to nurses: *Bellariorum copia & præsertim*

ⁿ Lib. 4. cap. 6. pag. 67, versa.
tato. Moschion, pag. 7. No. 77, 79.

° Aet. in loco modo citato.
^p Ibidem.

præsertim pinearum, hæ enim quod oleaginosæ sint, bilem generant, & in stomacho fluitant; sed et venerem excitant, a qua omnino nutricem abstinere oportet: hora enim concubitus menses provocantur; unde et lac corrumpitur et depravatam paucissimumque generatur: “ A great quantity of preserved fruits, and above all of pine-apples, for these as they are oleaginous generate bile, and float on the stomach, but they moreover excite concupiscence, which a nurse should be entirely exempt from: for at the time of coition, the menses are excited; whence the milk is corrupted, and is generated very scanty and ill-conditioned.” *Moschion* delivers himself to the same purpose¹. When nurses are chosen, the question is generally asked, whether they ever had their monthly evacuations at the time when they gave suck? If they own it, it is thought that such nurses are not the most serviceable. I have known six nurses changed in the space of a year upon this account alone. In such a case, I carefully examine the nurse and her milk. If I find no alteration in her health, if the quantity and quality of her milk is unexceptionable in every respect; no nurse was ever changed by my advice. It should be observed at the same time, that poor nurses, when they perceive their monthly evacuations beginning, are uneasy in their minds, being apprehensive of being turned off. But when being encouraged by kind words, they conceive hopes that what they dread, will not come to pass, their terrors are hushed, and their former alacrity returns. I can safely assert, that I never, upon the above-mentioned conditions, knew any ill consequence arise from childrens sucking the breasts of a nurse, during the time of her monthly evacuations. There seems to be more reason for apprehending danger from a frequent change of nurses. It is indeed customary in courts to keep nurses

from

¹ In loco modo citato.

from cohabiting with their husbands; and *Aetius*^r expressly forbids their lying with a man, both on account of their menses, from which he apprehended danger; and because, *Quædam earum concipiunt; quo nihil nutriendo infanti perniciosus*: “Some of them conceive, than which nothing can be worse for the child who is brought up by them.” However, daily observations shew, that women who give suck to their own children, have an unconstrained commerce with their husbands, and yet bring up their offspring happily; and that many of them conceive at the time of their giving suck. Is it not rather to be feared, that a woman who in the flower of her age, lives high and elegantly, should have a secret commerce with a man, or that she should languish and decline in health, if rigidly watched. I have sometimes known this happen. This is the reason why a moderate indulgence of lawful love is not thought hurtful to the nurse or to the child^s. It is true indeed, that women are to be met with, who are not by constitution very prone to venery; whose constitution is then generally frigid and unsusceptible; but such women are chosen for nurses as are in perfect health and full of juice, and in them the constitution is quite different.

Nor does there appear to be any such great reason for fear, if they should conceive at the time when they give suck: this happens pretty frequently to women who nurse their own children: but as their menses often do not flow whilst they give them suck, it frequently happens that such become pregnant unknown to themselves. Nay, in many, the milk continues to be equally good and copious on the first months of pregnancy. It generally happens that the womb being increased in bulk, the quantity of milk in the breasts is diminished; nay, even vanishes spontaneously: but the child having, at least for some months,

^r In loco modo citato.

Tom. I. chap. 5. pag. 205. & seq.

^s Brouzet. educat. medecin.

months, made use of it's mother's milk, will more easily bear being weaned. It is generally thought to be hurtful to the newly conceived embryo for the pregnant woman to give suck to a child : but it is of so inconsiderable a bulk, that it can easily find nourishment in the womb, though a great quantity of milk should be every day carried to the breasts. If a woman can nourish two, nay more foetuses in her womb, why can she not at the same time nourish one foetus in the womb, and a child just born.

I knew a woman, who perceiving the pangs of delivery begin, gave suck to the child she had had that year; and laughing, advised it to bid adieu to the breasts, which were, even then, devoted to the child who was upon the point of coming into the world. When I expressed my surprise at this, she said she had done so six times before. A few hours afterwards, she was delivered of a strong and healthy child, whom she happily brought up.

It does not seem improper to treat in this place of those impediments, which either entirely prevent the child's sucking, or make it suck with difficulty; and to consider at the same time, by what method these obstacles may be removed or corrected.

It is well known that the mouth and the lips are chiefly employed in suction, wherefore it is requisite that these parts should be intire, and should move with freedom. Amongst the ligaments which strengthen the tongue, and keep it in it's proper situation, the chief is that which is inserted in the foremost and lower part of the tongue, which is commonly called the Frænum. If upon the mouth's being opened, the tip of the tongue should be raised up, it immediately appears to the eyes: it is a continuation and doubling of the membrane, which clothes the lower cavity of the mouth loosely sticking to it. This ligament prevents the tongue from being too much drawn back towards the jaws: but it is observed, that the extremity of it, comes nearer to
the

the extremity of the tip of the tongue in children newly born, than in grown persons; nay, that it sometimes, though rarely, is lengthened out as far as the extremity of that tip, and that it then prevents the tongue from being raised to the roof of the palate, or from being brought to the extremities of the lips. Thus the free motion of the tongue, requisite for suction, is obstructed. In such a case, the forepart of the ligament is separated from the tip of the tongue by a slight cut, made by a prudent hand.

A very pernicious custom has obtained amongst midwives who affect knowledge of tearing this with the nails, and cutting it with scissars, doubtless in the belief that this is necessary to easy suction; nay, that in grown persons, speech would never be free, if that membrane was not cut. This has given rise to the proverbial expression concerning babblers: *Lo-rum linguæ illis nimis resectum fuisse*: “That the bridge of their tongues was too much cut.”

It is obvious that the first thing to be inquired into, is whether there be occasion for that cutting or not; which is tried in this manner. If the child can bring it's tongue as far as the extremities of the lips; if it can touch the palate with the tip of it's tongue; if by sucking it can take hold of a finger that is put into it's mouth; then there is no occasion for this cutting, as the tongue has the volubility requisite for all those purposes which are to be fulfilled at that stage of life; namely suction and deglutition. The celebrated *Petit* ^t, in whose praise we have so often spoken already, if he had any doubt concerning the necessity of cutting the Frænum, caused the child to be brought to it's nurse's breasts, if it could suck, he did not cut it; though he himself thought that the motion of the tongue was by that impediment rendered less free. For he chose rather to defer the operation till the child was grown, because it may then be more easily attempted; and he has often ob-

served,

^t Acad. de scienc. l'an. 1742. mem. pag. 333, & seq.

served, that that defect is insensibly corrected by time, so that they speak with the greatest ease imaginable, though all are for having the Frænum cut immediately after birth. Besides as it is somewhat difficult to perform this operation upon new-born children, in such a manner, that the cut shall be neither too big nor too little, it is justly deferred upon this account, except an impossibility of sucking should make it necessary. For *Petit*^u has known cases, in which it was necessary to perform the operation a second time upon a grown person, in order to remove the impediment in the speech, as the first operation had not set the tongue entirely at liberty. On the other hand, if the cut be too long, the fore-part of the tongue is not sufficiently supported.

Observing a child stammer, he was of opinion that this was owing to the Frænum's being cut rashly, and without any necessity. He acknowledges that one half of the children to whom he was called, had no occasion for this operation, and that he had not attempted it on all the children, in whom the motion of the tongue was obstructed by this impediment.

On each side of this Frænum of the tongue, there lie ranine, arterial and venous vessels, which may be easily hurted by an unskilful hand; especially the venous vessels which are placed before the arteries: but whilst a new-born child attempts to suck almost continually, the hæmorrhage is hereby increased, and it dies sucking it's own blood. Such an unhappy case is described in *Dionis*^{*}, of a new-born heir to a rich family, in cutting whose Frænum, the surgeon unknown to himself, hurted a ranine vein. As he saw the child suck the breasts with ease, he went off unconcerned. The nurse laid the child, who was, as she thought, satiated with milk in the cradle; it continued to move it's lips, just as if it sucked; which
is

^u Ibid. pag. 339.
pag. 266.

^{*} Andry Orthopedie, Tom. II.

is common enough with children; so that no body apprehended any ill consequence from thence: but it began to turn pale, to grow weak, and died shortly after. When the body was opened, the stomach was found full of blood. Many similar cases occur in medical history.

It appears from hence, that a careful hand is required to perform this operation with safety. Such a hæmorrhage, though it always frightens people, and unfortunate cases have shewn, that it is not without danger, may however be suppressed by art, if the surgeon be not wanting in skill and dexterity, and if he be resolute. *Petit*¹ declares, that no child to whom he had ever been called, died of such an hæmorrhage. In grown persons, as it is well known, the ranine veins may with safety be pricked with a lancet; but they keep their tongues unmoved as they are directed, and the blood is quickly stopped by cold water, or a bit of ice put under the tongue. But children constantly suck whilst the blood runs out, and thus the hæmorrhage not only continues, but is increased. The chief remedy in this case, is to keep the tongue motionless, and prevent suction. *Petit*² took a little fork made of a bough of soft wood, in that place where too little branches of an equal length, as nearly as possible, form a fork; he made use of it for this purpose. But he took care that the trunk should be four lines in length, and each of the little branches eight lines; thus he made a little fork, whose handle was shorter by one half than it's teeth: a thin linen cloth wrapped up this whole machine, which he put under the tongue of the child in such a manner, that the extremity of the handle touched and leaned upon the lower jaw; but if the angle, formed by the diverging teeth of this fork, is applied to the open vessels, whilst at the same time, the teeth on both sides, prevent the motion of the tongue:

¹ In loco modo citato, pag. 353.

² Ibid. pag. 356.

tongue: he then applied a swathe of thin linen, an ell long, and eight or ten lines broad to the tongue, so that it might touch both corners of the lips; he then brought it under the jaw, divided it near the wind-pipe, and fixed each extremity of the swathe, to the back part of the flat. Thus the tongue was strengthened, and the injured vessels were compressed. By this method, the child was preserved, though the hæmorrhage had lasted for four and twenty hours, and it was very weak ^a.

That excellent person admirably observes, that an hæmorrhage may follow, though the operation has been performed ever so dexterously, and though none of the rarine vessels have been hurted. For he saw such a case, when the limit of the cut was above two lines distant from the ranine vessels, and yet a considerable quantity of blood run out. This may happen if the greater branches of these vessels should pass through the fold of the Frænum: which then chiefly happens when it is more thick than usual.

But another danger impends, if the Frænum of the tongue should be cut without reason, or too long a cut should be made; the little blood which always flows from the injured vessels, provokes the child to swallow; and thus the tongue, when the Frænum which was cut, does not strengthen and retain it, is drawn towards the hind parts, it's tip is brought behind the pendulous veil of the palate, the basis of the tongue being conducted backwards, depresses the epiglottis, stops up the chink of the glottis, and the child is soon suffocated. Such a melancholy case fell under the observation of *Petit* ^b. The Frænum of a child was cut immediately after it's birth, and in the space of five hours it was suffocated and died: being called upon to examine into the cause of this sudden death, he could not find the child's tongue upon thrusting his finger into it's mouth; but he touched a sort of fleshy mass, which stopped up the passage

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^a Ibid. pag. 353.

^b Ibid. pag. 339.

from the mouth into the jaws. Having cut both cheeks as far as the muscles of the lower jaw, he perceived that that fleshy mass was the tongue, he dragged back behind the uvula, that the tip of the tongue looked towards the wind-pipe. Hence it appeared evidently, that the unhappy child had swallowed it's own tongue.

Afterwards, whilst this case was fresh in his memory, he was called to a child, whose Frænum had been cut two hours after it's birth; who soon after fell into a danger of the same kind: he immediately thrust his finger into it's mouth, and found the tongue not quite drawn back into the jaws; with his finger he reduced it to it's proper position, and a sound was heard, just as if the stopper was by force pulled out of a squirt. The child continued to make the motion of sucking, the sound of swallowing was heard during four or five minutes, and there suddenly appeared the symptoms of approaching suffocation. He immediately brought the tongue out of the jaws with his finger, and kept it in that position for a few moments; then the child began to suck the finger, and the breast being offered to it, sucked greedily. It was thought to be quite out of danger, but after the interval of an hour, the same danger returned; which *Petit*, who happened to be in the neighbourhood, happily cured a third time, and he thought it necessary to stop the motion of the tongue whilst the child sucked. For this purpose, he put upon the tongue a plaister two inches long, fifteen lines broad, and six lines thick, and bound it with a swathe of four heads. This was taken off that the child might suck, and soon after put on again; this method succeeded happily during the whole day, and the nurse retired to the country with the child. The stupid woman, thinking this apparatus unnecessary, removed it, and whilst she slept, the unhappy child was stifled and died. The tongue was found behind the uvula, as in the former case. Two or three years afterwards

afterwards, another similar case occurred, but proper care being taken, the child was cured.

It seems still more surprising, that the same misfortune should have happened to a child two hours after it's birth, though the Frænum was not cut. *Petit*^c declares that he had seen this: by accident a finger was thrust into the mouth of the child, the stifling ceased, and it began to suck the finger; the same danger often recurred, and relief was procured in the same manner. The attendants were obliged to watch night and day to preserve the unhappy child from approaching suffocation; after two or three weeks, it made no more attempts to swallow it's tongue. It is well known that the slaves of *Angola* strangle themselves by swallowing their tongues, if they are weary of too hard a slavery; that by hurting their masters by their loss, they may revenge their sufferings. Who taught them this fatal art, of which it is not possible to make more than one experiment? Could the Frænum of the tongue give way too much during their infancy? In persons who die of the falling sickness, and are suffocated in the fit, the muscles of the tongue being violently convulsed, does something of this kind happen?

For all these reasons, *Petit* justly laid it down as a maxim, that the Frænum of the tongue should never be cut if the child was able to suck. Foolish women when they touch the Frænum, by putting the finger under the tongue, are for having it immediately cut, not knowing that that ligament is in it's natural place, and is of great use. But if an absolute necessity requires this, the nurse should be present, in order to give her breast to the child. For it begins to suck the blood which flows from this little wound, which soon ceases, if the operation be happily performed; but if the breast be not offered to the child, it continues to make vain efforts to swallow, and thus at last, swallows it's own tongue.

Z 2

But

^c In loco modo citato, pag. 343.

But when the cutting of the Frænum is absolutely necessary, the greatest caution is to be observed, in order to avoid hurting the ranine vessels. If the surgeon could put his fingers between the tongue and the lower jaw; this cut can be easily made with a pair of scissars with blunt tops. But it often happens in such a case, that the tongue is so obstructed, that it's tip cannot be raised up. He invented, described, and gave the figure of an admirable instrument^d, by which this operation may be safely performed; and he detected the faults of another instrument for the same purpose, which was generally praised before.

Sometimes, but rarely, the parts of the tongue which are towards the sides, are bound with preternatural ligaments^e to the neighbouring parts, which are to be cut off, which may be done with safety enough, as there is no danger of hurting the vessels.

Another cause which impedes suction has been taken notice of; a cause which has scarce been attended to. It sometimes happens that the tongue is fixed very fast to the hollow vault of the palate, and sticks as fast as if it was glued to it. In that case, the tongue is to be removed from the palate with a little spatula, or such like instrument, that the child may be able to suck and swallow. Three cases are related^f of children, who for several days together, were unable to suck upon this account, and were happily preserved by this method.

There may likewise be obstructions in the uvula, or in the jaws which render suction and deglutition difficult, as they prevent the free action of the parts requisite for deglutition. Thus *Hippocrates* remarked^g: *Quos infantes dum lac sugunt, tussis obsidet, illi uvam majorem habere consueverunt*: “ That
“ those children who are troubled with a cough
“ whilst

^d In loco modo citato, pag. 351
accouchm. pag. 222.
chirurgie, Tom. III. pag. 16.
VII. pag. 872.

^e Levret l'Art des
^f Mem. de l'academ. royale de
^g De dentit. chart. Tom.

“ whilst they suck, have generally the uvula larger
 “ than others.” Afterwards he continues to enlarge
 farther upon the ulcerous disorders which sometimes
 infest these parts.

If the upper lip should be slit from the birth,
 (which is commonly called having a hare-lip) suction
 is difficult, chiefly as the vault of the palate is ge-
 nerally slit at the same time, and suction is obstructed
 by the air's entering freely at this chink, or if they
 force a little milk out of the breasts, it generally
 runs out again at the nose; the same thing happens
 if food is given the wretches with a spoon. So that
 it is no wonder if many of them die. Some however
 escape. For they seem by degrees to accustom them-
 selves to close the slit of the palate, by raising up the
 back of the tongue, sucking with the tip of the
 tongue, and with the lips. When they become
 more robust, as they advance in years, the slit lips
 are joined together by the surgeon's art, in most of
 them the slit of the vaulted palate is diminished by
 degrees; and is at last intirely removed^h. I have
 however seen some whose upper lip was intire from
 their birth, and the vault of the palate had a great
 slit in the hindmost part, which could easily admit
 the tip of the little finger. I have seen a man who
 was above fifty years of age, whose lip remained slit,
 no care being taken of it, the vault of the palate was
 however intire. Whether he had a slit before or not,
 I could not discover.

From what has been said, it appeared sufficiently,
 that milk is the natural and best nourishment for
 new-born children. We are now to consider how
 that milk retained in the stomach, should be
 changed, and what ill consequences may follow from
 it's not being properly digested.

Milk, as it is well known, if it is left at rest in a
 clean vessel, at first appears of an uniform whiteness ;
 Z 3 then

^h Levret l'Art des accouchm. pag. 224. mem. de l'academ.
 royal de chirurg. Tom. I. pag. 605.

then it throws up cream, white, thick and fat; which being taken away, the milk remains skimmed, blueish, and more pellucid, because it at the same time contains the serous and cheesy part of the milk. For if coagulated milk, which is prepared of juice of the ventricle of animals which chew the cud, is mixed with milk, it unites with it, becomes one equable, coagulated mass capable of being cut, which in a short time, turns to serum and cheeseⁱ. From whence it appears that the milk is naturally coagulated in the ventricle. Wherefore children, if they suck the breasts too eagerly, soon after belch up cheese, but soft and not of any great compactness. At the same time it is to be considered, that human milk contains less of that cheese, than the milk of other animals; for human milk is very sweet and very thin; asses milk is the next to it, then that of mares, goats and sheep; in fine, that of cows, which is the the thinnest of all, contains a great quantity of cheese. This furnishes another reason why human milk suits new-born children better than any other sort. But milk, especially when it is kept in a warm place, turns of it's own accord to an acid acrimony; which being come, hastens and increases the coagulation of the milk; wherefore it is said in the text, that children then suffer a great deal by the milk, if it be too quickly and too strongly coagulated and compacted in the stomach. After death I have sometimes seen the whole stomach distended with thick cheese of a sour smell.

But whilst the milk coagulated, though still soft, comes out insensibly by the pylorus, it immediately is found in the duodenum to be very like saponaceous bile, pancreatic juice and spittle, by whose efficacy that compacted mass is diluted, dissolved, and so prepared, that in the remaining tract of the intestines, whatever is good may be sucked from it, and the useless dregs may be voided by the anus; which

dregs

ⁱ H. Boerhaave, chem. Tom. II. pag. 298.

dregs are observed to be sufficiently solid and copious in infants nourished by their mother's milk only. But those dregs seem for the most part to owe their origin to the cheese contained in the milk. For this reason, *Hippocrates* ^k, *Quibus multum lacteum vomitione refunditur, illis alvus sistitur*: "Those who vomit up a great deal of cheesy matter, become constive." It is worthy of observation, that he has not said milk, but γαλακτωδες something milky, for they vomit or rather belch up cheese, but it is soft, and thus the quantity of matter to be thrown off by stool, is diminished. He also makes the following observation ^l. *Qui copiosius mejunt, quam dejiciunt, pro ratione melius nutriuntur*: "Those who make water oftener than they go to stool, are in proportion better nourished." For in them whatever is capable of being dissolved by the force of the viscera, which make the chyle, is resorbed into the blood; whence there is less plenty of excrements; whilst the copious urine proves notwithstanding that they have drank milk enough. He has condemned the opposite extreme ^m: *Qui non pro ratione mejunt, sed a pueris alvus crebro crudum dejicit, ii morbis sunt obnoxii*: "Those who do not make water in proportion, but frequently void crude matter, are subject to diseases." But he speaks advantageously of frequent going to stool, accompanied with good digestion: *Quibus copiosa profluit alvus & belle concoquunt, ii magis sanitate fruuntur*: "Those who have frequent stools, and who digest well, enjoy their health better." For this shews that a quantity of milk has been drank, and well digested.

Whence the milk is naturally coagulated in the stomach of a child; but the coagulation is said to be morbid, if it is effected too quick and too strongly. This may be in a great measure avoided, by attending to what follows.

Z 4

Children

^k De dentit. charter. Tom. VII. pag. 871.

^l Ibidem.

^m De dentit. charter. Tom. VII. pag. 872.

Children indicate their disorders, and their want of food by their cries alone. It often happens, that nurses immediately offer them the breasts, not thinking of any other cause of their crying, and if they have plenty of milk, they offer them again a short time after. It is good for children just born to suck frequently, but at the same time they should take but a small quantity of milk; for otherwise the stomach will be too much distended, and then it will not be able to act upon the milk contained in it, which soon growing sour, will occasion new cries, and if the child sucks again, all the bad symptoms will be greatly increased. Wherefore *Moschion*ⁿ has prudently advised not to give the breasts at every cry, but to examine carefully whether the swaddling clothes, being too hard bound, the limbs being distorted by them, or the excretion of urine or excrements, may not have occasioned these cries. For he says the child wants nourishment: *Si hypochondriaca cava sint*: “If the hypochondriacs are hollow;” the ventricle being emptied; if so much time has passed since it sucked last, that it stands in need of nourishment; if it opens it’s mouth, moves it’s lips; catches at, and sucks the finger when brought near it’s mouth. For it is sometimes oppressed and tormented by the too great quantity of milk contained in the ventricle; then it tosses itself this way and that, and the entrails in the chest swell on account of the ventricle’s swelling; in such a case, the pain would be increased by taking in more milk. If no cause is discoverable, to which the crying can be ascribed, then *Galen* gives us to understand^o, that besides the nurse’s nipple, there are two other ways of assuaging these pains: *Motum mediocrem, & vocis modulationem*; *quibus perpetuo usæ non solum mitigant sed etiam somnum conciliant*; *vel hoc ipso testificantes, ad musicam eos & exercitia, suo pte ingenio esse propensos*: “A gentle
“ motion

ⁿ Spachii gynæc. pag. 9. No. 99, 100, 101.

De sani ta t. tuend. lib. 1. cap. 7. charter. Tom VI. pag 51.

“ motion and singing, by the constant use of which,
“ they not only mitigate the pains, but procure the
“ children sleep, which alone is sufficient to shew
“ that they have a natural turn to musick and exer-
“ cise.”

But there is another cause which increases and accelerates the coagulation of the milk ; I mean too great a motion of the cradle. It is well known that fresh milk, by agitation alone, may in the cleanest glasses be made in some measure to coagulate, and that frequently in a short time, the fat part of the milk resembling butter, is separated from the other parts, that it afterwards grows sour, and by delay is converted into a tainted acrimony. This butter being removed, the serum is left mixed with the cheesy part of the milk, which is called milk unbuttered, it is tolerably thick, and soon grows sour. When the women who attend children, endeavour to stop their cries by much rocking of the cradle, the blood in the ventricle is soon changed in like manner. It was before observed in sect. 63, where the ill consequences resulting from an acid acrimony in the ventricle were treated of, that the ventricle itself is not so very sensible ; but that the upper orifice of the stomach is very much affected and pained by any thing sour ; so that while the acid continues quiet in the stomach, no pain is felt ; but as soon as a belch, forcing upwards, occasions motions and changes of situation in the body, which cause a sour acid to stick to the uppermost orifice of the stomach, a troublesome heart-ache follows. How much then must an unhappy child suffer, whilst it is violently shaken as it lies in a cradle, in a situation almost horizontal. Nay even the brain, which is so easily moved at this age, may by the violent agitations of the cradle be disturbed ; especially if they be unequal ; whence vertigoes, vomitings and convulsions, are with reason apprehended^P. I have known a boy of a robust constitution,

^P Brouzet. educat. medecin. des enfans. Tom. I. pag. 123.

tion, and eight years of age, who being kept by force in a cradle by his play-fellows, was by the rapid motion of the cradle, seized with a vertigo and dizziness, which was followed by a vomiting of corrupt bile: the wretch lingered for a few days after.

Therefore those cradles are thought the best which do not stand upon the floor, but being suspended with cords on each side, may be agitated equably with a very gentle motion; these with very little friction, vibrate like a pendulum, the motion being insensibly diminished, they return to a state of rest, and at last continue so. In cradles which stand upon the ground, children generally awake as soon as the motion ceases.

Such an easy motion of the cradles is highly beneficial to children; for it is the most gentle sort of bodily exercise, and is both pleasurable and advantageous.

S E C T. MCCCLV.

FOR this insensibly becoming more sharp and sour, causes green excrements of a sour smell, sour matter thrown up by vomiting; and hence arise gripes, flatulency, pains, and many other bad symptoms, chiefly convulsions.

In the chapter, wherein spontaneous disorders arising from an acid humour, were treated of, and in those which follow it, appeared evidently, that the chief seat of acrimony, is the place where the first digestion is made, I mean the stomach and intestines; and that these viscera are therefore first affected.

But the blood coagulated in the stomach grows more sour by delay, and a sourness having once taken
rise

rise in the ventricle, whatever milk is sucked in, is that instant strongly coagulated, and acquires the same acrimony; hence wise physicians as soon as a child has a sour belch, or has vomited up sour matter, immediately endeavour to dispel that acrimony by remedies which absorb the acid, being perfectly sensible that the cure of this disorder becomes more difficult, if by a long delay, the whole hollow surface of the stomach, becomes as it were tinged with acid. For as fresh milk upon being put into a vessel which has long held sour milk, is immediately spoiled; the same thing happens in the stomach when fresh milk is poured into it. In that case, all that is contained in the length of the intestines, degenerates into an acid acrimony, and the excrements turn green, and have a very sour smell.

A large liver in new-born children, copiously separates the bile, which being mixed with the cheese that comes out at the pylorus, dissolves its tenacious quality, and corrects or mitigates the acid acrimony; hence, in healthy children, the excrements are equable and grow yellow. But as soon as the bile becomes sluggish, or its quantity fails, white lumps of cheese come out at the anus mixed with the excrements; and at the same time the yellow colour of the excrements is changed into green, which is sometimes of so deep a hue, that the sheets are stained with spots resembling those of rust, and very hard to be washed out. Hence physicians acquire a certain knowledge of childrens being troubled with an acid acrimony, by inspecting their excrements. For if the excrements be equable, and without any mixture of cheesy lumps, it is looked upon as an admirable symptom. If yellow excrements are voided by the anus, but when left upon the sheets, quickly turn green; this furnishes a symptom that an acid acrimony is approaching. But if they come out green, and of a sour smell, it is reasonable to conclude that the whole tract of the intestines is filled with sour cheese.

cheefe. See sect. 63, 64. But it is easy to conceive, that from the perpetual irritation of such an acrimony, continually growing worse, pains, gripes, flatulencies, and many other disorders may arise.

At the same time their whole bodies are emaciated, the abdomen swells by the cheefe heaped up in the intestines, and if that cannot be evacuated, and the acid be subdued, they perish miserably. But when the disorder is so far gone, it is very hard to be cured. They have often a very voracious appetite; and *Hippocrates* seems to have hinted at this, when he says: *Qui mammam sugentes non probe aluntur: macilenti sunt & ægre reficiuntur*: “Children, who
“ whilst they suck the breasts, receive but little nourishment, become lean, and are with difficulty supported;” and in another text likewise: *Voraces quique copiosum lac trabunt, non pro ratione corpulentæ evadunt. Quibus modice (fertur alvus) & sunt voraces, neque pro ratione e nutriuntur, morbis sunt obnoxii*: “Children who have a great appetite, and
“ suck a great deal of milk, do not grow fat in proportion. Those who are somewhat loose, have a
“ great appetite, and do not receive nourishment in
“ proportion, are subject to diseases.”

Physicians often meet with wretched children, who being totally emaciated in body, have a swelled and prominent belly; this happens chiefly amongst the lower sort of people, who being overwhelmed with poverty, and domestick care, often neglect and disorder in it's beginnings, and have recourse to the physician too late. The wretches continue costive too long, afterwards a violent looseness follows, their strength fails, and death puts an end to their sufferings. It may perhaps seem surprizing, that a disease occasioned by an acid acrimony, should end in a putrid looseness. But the corruption of the viscera, which are seized with a gangrene, comes out by stool; and

q De dentit. charter. Tom. VII. pag. 872.
pag. 871.

r Ibid.

and besides the cheefy part of the milk, though it at first turns sour on account of the copious mixture of serum, in it's own nature borders upon that of animals. For old cheese grows rotten and sour; nay even if it has not rotted, it melts like horn when put upon a fire, and exhales the same sort of bad smell, as the limbs of animals when they are burned. But cheese being tried by chymical art, produces the same sort of matter as generally comes by fire from the solid and fluid parts of animals.

The disorder however frequently does not proceed so far; but they at first die in convulsions; whilst a sour acid preys upon the intestines, and irritates the whole nervous system, which at that age is so subject to change.

Wherefore *Hippocrates*, in the text cited in page 712, has informed us: *Pueris vero convulsiones fiunt, si febris acuta fuerit & venter non dejiciat & vigilant & perterreantur & ejulent & colorem immutent, et ex viridi pallidum aut lividum aut rubrum colorem induant. Hæc autem promptissimi accidunt puerulis recens natis ad septem annos usque*: “ That boys are seized with convulsions if they happen to have an acute fever, if they have not sufficient evacuations; if they lie awake, are terrified, and cry, and change colour, and instead of a florid complexion, take a red or livid hue. For these things most frequently happen to new born children, till they are seven years of age.” Costiveness shews that there is matter retained, and the other ills are symptoms of pain. Wherefore we elsewhere meet with the following observation: *Puerulis febris acuta & alvus suppressa, cum vigiliis et calcitrare & colorem mutare & ruborem habere convulsorium est*: “ When children have an acute fever, and are costive, and change colour, and are red, they are convulsed.” For whilst children are seized with the gripes, they kick continually. Convulsions are likewise prefaged by strange rollings

rollings of the eye-balls, which appear even when the eyes are shut : they also look with terror at those who attend them, an effort to vomit soon follows, and after that a convulsion.

S E C T. MCCCLVI.

THESE disorders are cured by fixed alkalines mixed with purgatives, with clysters of the same nature, gentle carminatives, internal and external oils.

An acid acrimony can be overcome with safety by absorbing remedies, as was said before ; but such remedies are insufficient in this case ; but besides, such remedies are required as may dissolve those cheef lumps in such a manner, that they may pass with ease through the pylorus, and then through the windings of the intestines. At the same time a gentle stimulating purge is beneficial, that they may be forced out more easily, and more quickly by stool.

But as the cheefy gathering is increased by the acid, fixed alkalines, alkaline salts, for example, are recommended, as they may be serviceable both in destroying the acid, and dissolving the gathering made before by the acid. For this reason, *Hoffman* highly recommended, *Usum pulverum absorbentium oleo tartari per deliquium imbibitorum ; si cum equali portione rhabarbari addita una vel altera gutta olei anisi vel fœniculi vel etiam pauxillo croci, misceantur & crebrius offerantur* : “ The use of absorbing powders “ drank with oil of tartar by infusion, one or two “ drops of oil of anniseed or fennel, or even a little “ saffron being added to it, these ingredients should “ be mixed together, and frequently offered to “ it.”

It has been proved by plain experiments^u, that if the oil of tartar is mixed with milk, the consequence

^t Med. rat. & system, Tom. II. pag. 341.

^u Herm. Boerh. chem. Tom. II. pag. 302, 303.

is : *Coagulari & secedere in massulas coagulatas, quamvis haud adeo magnas, compactasque ac acido nec tam facile durescentes* : “ That it is coagulated, and turns
 “ into coagulated masses, which are not very hard
 “ and compact, and not easily hardened by the
 “ acid.” Besides, *Si lacti per acida vel per coagulum, coagulato & servido, alcali admiscet videtis non esse verum quod ubique asseritur, resolvi illud coactum in antiquum liquidum rursus & resolvere alcalia quæ ab acidis erant densata* : “ If I mix an alcali with milk coagu-
 “ lated by an acid, or by coagulation and warm, you
 “ see plainly that what is commonly asserted is not
 “ true, that that coagulation is again resolved into
 “ it’s antient liquid, and that it resolves the alcalics
 “ which were thickened by the acids.” Therefore
 as those fixed alcalics have a considerable acrimony
 which might be pernicious if it was not mitigated by
 immediately meeting with the acid, and yet are not
 of service in dissolving the gathering by the acid ;
 many physicians have thought it better to subdue the
 acid acrimony by absorbing remedies ; and at the
 same time to apply such things as might have the
 power of dissolving the thick cheese, and are mild.

These remedies are principally recommended for
 this purpose. *Bilis, ovi vitellus, sapo ex oleo presso & sale alcalino fixo paratus* : “ Gall, the yolk of an egg
 “ and soap, made of pressed oil and alkaline salt.”
 Gall if it be good, and in a sufficient quantity, dis-
 solves the milk coagulated in the stomach of a child,
 whilst it is mixed with it in the duodenum. The co-
 agulation of milk is found very copious in the first
 stomach of calves ; but when it is mixed with the bile,
 it is again so dissolved, that it disappears in the fourth
 stomach of these animals. When therefore symp-
 toms proceeding from the coagulation of milk ap-
 peared, physicians concluded that gall was either in
 an insufficient quantity, or too dead to perform it’s
 functions ; but in that case nothing seemed more
 proper than to pour gall made in the body of some
 animal

animal that is in health, into the child's body : the bitterness occasioned some difficulty, and for that reason it was mixed with clysters. But the gall of oxen, thickened by a gentle fire, is sold in the shops, and a little of the dust of saffron being added to it, small pills are made of it, which are to be properly gillt, some of which are given once or twice in a day, covered with thick pap ; this remedy is sometimes successful, especially if voracious children swallow it quickly, before the pills being steeped in the pap, begin to be dissolved.

Others have for the same end, applied the gall-bladder of an eel when full of it's gall. But as this fish has no teeth, and digests well, it is thought that nature has given it a more active gall than any other animal. At the same time it was liked, because such unmixed bile, not being altered by fire, being held in it's own bag whilst it stays in the stomach, upon being swallowed, would at last run through the narrow passage, and mix with the contents of the ventricle.

The yolk of an egg, as it is well known, oils and natural balsams, if they be mixed with them, make them fit to be diluted with water ; nay, it even destroys the tenaciousness of gums : for this reason it is recommended for dissolving the coagulation of milk, which besides cheese, and the fat buttery part of milk, contains what can be easily dissolved by the yolk of an egg. At the same time, the yolk of an egg has no acrimony, and affords mild nourishment.

When alkaline salt, being rendered more powerful by a mixture of unslacked lime, is boiled with pressed oil, water being added to it, there is made a compleat union of the alkaline salt with oil ; and from this union, there arises a white mass compact, capable of being cut, which can be compleatly dissolved in water, which neither liquefies in the air of it's own accord, nor affects the tongue with a sharp alkaline flavour. It is then called soap *, which is looked upon

* Herm. Boerh. chem. Tom. II. pag. 257. & seq.

upon as better and fitter for physical uses; the more pure the alkali is, and the more genuine the oil, not being disagreeable either in taste or smell. There remains in this mixture, the antient force of lixivious salt, with which it clears away and attenuates glutinous particles, and that without any danger of griping. It prevents the acids from coagulating either the chyle or the milk; nay, when these are thickened by the acid, it again dissolves them, which alkaline salts alone cannot effect. *Facit sapo, quod aqua nequit; quod oleo negatur id præstat. Efficit tuto quod alcalia cum periculo. Potest exsequi quod reliquis salibus nefas*: " Soap does what water cannot do, what is not in the power of oil, it can effect. It does that with safety, which alkalics do with hazard. It can bring that about which other salts cannot."

But we know from certain and numerous observations, that a large quantity of Venetian soap may be born by the human body, without it's doing it any hurt. Wherefore no body will be surpris'd, that in the *Materia Medica* at this article, there is a prescription of two drams of soap, with the addition of a double quantity of the yolk of an egg, diluted in four ounces of water, and to be given by spoonfuls to children: to these ingredients are added rhubarb, crab's shells, and a mild syrup of marsh-mallows to sweeten them. It is proper to give this quantity of soap, whilst the distension of the stomach and abdomen, indicate that a quantity of thick cheese is gathered, and sticks in the intestines. For then there are generally voided by stool, cheesy lumps which are at first white, afterwards stained a little with the colour of rhubarb, whence arises great ease to the patient, and the swelling subsides. A gentle stimulating purge of rhubarb, promotes the dissolving force of the soap through the whole tract of the intestines, as do likewise absorbing powders which subdue the acid when it comes in their way. Thus this method admirably answers every purpose of cure.

Such remedies are required in order to dissolve and drive out the cheese: but a much less quantity of soap is sufficient to prevent the too great coagulation of the milk in the ventricle. Before, where the use of milk was recommended for the cure of the phthisick, and to assuage the pangs of the gout, those who use a milk diet were advised to take six or eight grains of soap in a morning for this purpose.

If any malicious person, in order to hurt a countryman, should put only a dram of soap into a churn in which milk is agitated with violence and a long time together, that the butter may be separated from it, the separation of the parts which the milk consists of, is either not affected at all, or not without great difficulty. For this reason I took care that a spoonful of such a mixture, should for a few weeks be given twice or thrice a day to children just born, with only fifteen or twenty grains of soap dissolved in it. In this manner I could prevent the dangerous coagulation of milk and acid acrimony, with good success.

Clysters, which have soap or bile in them, answer the same end, namely, of dissolving and bringing out the cheese, if it had stuck in the thick intestines. The prescriptions are to be met with in the *Materia Medica* at this article.

Carminatives, that is, such remedies as dispel wind may without any thing else, be of great service when they are gentle; see what has been said upon this subject in the 650th section, where we treated of wind and belches. For the irritating cause being corrected or removed, all that flatulency ceases.

We in sect. 1348, explained the effect of oils taken internally, and at the same time told what cautions should be observed in giving them. They may, if applied externally, be of service with gentle friction; but if recourse is had to warm and aromatic oils for this purpose, they should be given either in small quantities, or with a mixture of other soft oils, lest the

the tender skin of children should be inflamed, and that would be productive of bad consequences.

But when an acid acrimony predominates in children, it is then proper so to regulate the diet of the nurse, that her milk may be the less disposed to grow sour; see what has been said upon this subject in sect. 66.

S E C T. MCCCLVII.

ATTACKS of the falling sickness, generally derive their origin from hence; the whole nervous system being irritated by vellicating acrimony.

In infants the head is very big, the whole body is soft. the nerves very tender, and liable to be excessively affected by very slight causes. Therefore provident nature has taken care, as has been already observed, that their eyes should not be affected by too strong a light, nor their ears by too loud a sound. It is not therefore to be wondered at, if the nervous system be irritated by the vellicating of an acid acrimony, and fits of epilepsy should follow, which are to be dreaded, not only on account of the imminent danger of death, but also because they have behind them very bad consequences during the remainder of life, even if the children should escape. Numerous observations shew, that distorted limbs, dimness of sight, deafness, an impediment in the speech, and perpetual idiotism, are the fatal consequences of convulsions.

Wherefore the celebrated *Hoffman* * has said: *Morbi, infantibus tenellis & pueris quoque proprii, instant maxime caput, inque ejus parte, tam externa quam interna, fixam suam sedem & domicilium habent*: "The diseases peculiar to tender children and boys, chiefly injure the head, and they have their fixed seat and habitation in it's inside and outside."

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Which

* Medic. ration. system. Tom. II. pag. 340.

Which he afterwards proves, by enumerating several of the disorders of children.

S E C T. MCCCLVIII.

HENCE they are cured by these remedies alone, if the case admits of a cure.

Silly women trifle egregiously in hanging red coral, elk's hoofs, wolves teeth, and other amulets about the neck of a child: however, a physician willingly bears with this, if they go no farther, and do not hinder a more efficacious cure, which alone can be effectual in removing these disorders; of this we have spoken already. But these disorders cannot be always got the better of, especially if they be of a long standing; whilst the attendants of children have recourse to many trifling remedies before they apply to a physician. After death, I have seen the stomach distended by a vast lump of cheese, and so full that it could neither receive food or physick: I have seen hard cheese thrust into the pylorus like a wedge which thus by obstructing the passage from the ventricle, has caused fatal convulsions.

Physicians have debated, whether it is proper to give other food to a child whilst it sucks. Some have thought it highly dangerous, if broths, crumbs of bread in water, and other things of a like nature were given with milk, and they thought that digestion was necessarily obstructed thereby.

The mother's milk, or that of a nurse in good health, furnishes the most proper and sufficient nourishment for children just born; and it does not seem proper that they should use any other food. About the third month, they are accustomed once or twice in a day to give them a spoonful or two of cow's milk, slightly boiled with a little meal, not so much to increase the quantity or strength of the food, as to use

use them by degrees to take food out of a spoon. On the first days, whilst this is attempted, the wretches chew such a sort of pap in their mouths, but they spit out the greatest part of it, and swallow but little. It is of service to have tried this, that there may be means of feeding the child if any bad accidents should happen to the mother or the nurse, which for a short time prevents the giving it milk, though it is not then absolutely necessary to wean it. Thus for example, if the nurse should be all on a sudden agitated by a violent passion, the child could not suck her milk at such a time without danger, but a few hours should be let pass till that disorder is entirely compos'd. For observations which may be depended upon, have shewn, that children have been suddenly convulsed who have sucked the breasts of a nurse transported with anger, or trembling with fear.

It is certainly dangerous to fill (with such pap) the ventricle of a child that eagerly sucks the breasts, that it may receive the more nourishment; for then the ventricle is loaded, and many ill consequences may follow; especially if by adding a large quantity of meal, and boiling it a long time, they make pap, which with it's viscid clamminess, loads more than it nourishes. It is likewise worthy of notice, that there occurs a great diversity of meal in different countries. I remember that I brought the choicest meal from my own country, to serve my purposes upon a journey, the remainder of which, when I compared it to the *Austrian* meal, I plainly saw that the *Dutch* meal is much more viscid than the *Austrian*. If meal made from Malt, be made use of, that would have less clamminess: for it is well known that grains of corn, sprinkled with oil, soon sprout up in a warm place; but as soon as this sprouting is but begun, these grains are suddenly dried by a violent heat, and this is then called malt, and of it beer is made. By this vegetation thus begun, and soon after stified, the mealy

clamminess is very much diminished ^v. In bread, the same thing is effected by a fermentation just begun, which is soon after suppressed by the heat of the oven; hence bread mashed, rather than boiled in warm milk, may answer the same purposes.

For the strength of the child being insensibly increased, it's ventricle becomes so firm, that it is able to digest other food besides milk: but in this case they begin with slight foods, such as have a great resemblance to milk, which is sucked out of the breasts; for thus the milk of animals is mixed with human milk. Many children can easily support this diet till they are weaned, and even afterwards they still are properly nourished with such paps, especially if they are prepared of bread twice baked, which is without any mealy clamminess, and is equably united with milk; in this it is likewise customary to mix the yolk of an egg.

Many advise to abstain entirely from the use of milk, as soon as the child begins to use other aliments ^z. And therefore it must seem inconsistent to mix the yolk of an egg with milk, as it belongs to the animal kingdom. I can with sincerity affirm, that I never observed any ill consequence of this, and that I often used the yolk of an egg, as I have observed in sect. 1356, to remove the too great cohesion of coagulated milk in the ventricle.

All sudden changes in the food, even of men in health, and of robust constitutions, are dangerous; wherefore it seems dangerous to lay aside the use of milk entirely at the time of weaning, unless the child has been accustomed to other foods during the time that it sucked the breasts. The excellent author himself acknowledges ^a, that a healthy complexion is altered, and that children become lean whilst they are weaned, by such a sudden change of food. He believes that children whilst they are weaned, contract a disorder,

^v Brouzet. *essay sur l'educat. medic. des enfans*, Tom. I. pag. 215.

^z Ibid. pag. 270.

^a Ibid. pag. 259, 260.

a disorder, but such an one, as if properly treated, has it's uses in the general œconomy of life. I own I would rather have the health continue unimpaired, than be disordered by weaning: for this reason I made it a practice, after the sixth month and sometimes sooner, in case children began to dislike a milk diet (which sometimes happens) to order them pannedo with chicken broth, or veal broth twice a day; but at first but in a small quantity at a time, for I was always attentive to observe, whether there was any change in the child's health. I only remarked, that the excrements became of a more yellow colour as soon as they made use of broths; but I have observed no ill consequence arising from this, though I have so often had the care of the children of kings, being most intent upon every thing, according as the nature of my office required. They all easily bore weaning. *Hippocrates*^b gives his suffrage to this in these words: *Qui dum lac sugunt, interea cibum capiunt, facilius ablactantur*: "Those who whilst they suck the breasts eat meat, are more easily weaned than others."

It appears from hence, that we have no such reason to lie under any apprehensions from a mixture of milk, with other sorts of food prepared of the juice of flesh: nay, it was before remarked, that the thicker part of milk, namely the cheese, is more of an animal nature than serum and butter, with which it is mixed. Nay, it is customary with many to use the milk of animals and broths after they have been weaned, and that without any sensible detriment: thus by degrees the poor creatures use themselves to various different sorts of food.

In the mean time, in the choice of foods after weaning, we should attend to the age of the child, and it's strength. Physicians would willingly not have weaning attempted, till teeth are grown numerous and firm enough, not merely to divide but even

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thoroughly

^b De dentit. charter. Tom. VII. pag. 872.

thoroughly to chew the more solid food^c; and then they advise to give the breasts but rarely to the child, but to offer it other food, that so it may be weaned by degrees.

But it sometimes happens, that the nurse's milk may fail by a disease, or of it's own accord, before the teeth are become sufficiently numerous; then the milk of animals is to be substituted, if another nurse cannot be procured: if cows milk is given, it is diluted with one fourth part water, and a little sugar being added to it, a sweetness is communicated to it; to make it the liker human milk. They sometimes pour such a mixture into a tin vessel, whose top covered with soft leather, resembles a nipple in bulk and figure, and is pierced with many holes, that the child may easily take it: if more water be mixed with it, it serves as drink. At the same time, the various species of pap, which have been already spoken of, are given; thus they go on till the teeth become more numerous and strong; teeth which shew that a small quantity of solid food may now be allowed. But no ills should be apprehended from milk with sugar in it^d. The antient physicians gave even mead or honey to new-born children: nay sugar being added to it, the blood is less powerfully coagulated. I have sometimes been surpris'd, that physicians have rigorously forbidden all use of sugar, whilst they the same day prescribed syrups prepared from sugar.

With regard to the time of weaning, it is generally agreed, that it is then come when the teeth are come out firm enough, and in a sufficient number; but as that time varies in different children, this cannot be exactly determin'd. I have seen as I hinted in sect. 1359, a miscarriage of five months, whose two four-teeth manifestly rose too high in the lower jaw-bone. I have seen a girl in perfect health, and

^c Moschion apud spach. gynæc. pag. 10. No. 113. harmon. gynæc. part. prior. cap. 22. pag. 18.
^d Brouzet. educat. medic. des enfans, Tom. I. pag. 273.

of a vigorous constitution, who had her first tooth when she was 19 months old. But the growing of the teeth more frequently begins about the seventh month, and the fore-teeth first come out in each jaw-bone. It often happens that the teeth, that is to say, the smaller teeth which are next to the eye-teeth or fangs, begin to come out before the eight fore-teeth have all come out. After this, the fangs follow, but more slowly. But as the gums, at the time of the teeth's growing, often itch, swell and feel pain, it is looked upon as a great happiness, if the child can at this time suck the breasts of the nurse, as the gums are in such pain, that that they cannot bear to be touched by a spoon; so that the weaning is protracted, according as the teeth are more quick or more slow in coming out. But as often the eight fore-teeth, the four molares, and the four eye-teeth come out entirely upon the eighteenth month; physicians have advised to attempt weaning^c in half a year's time, or at the end of two years. But there scarcely seem to be any grounds for apprehensions for the child, if it should suck the nurse's breasts longer. The brave matron, whilst treating the cruel *Antiochus* with contempt, she advised her youngest son to suffer martyrdom for the laws of his country with fortitude, said; *Fili mi miserere mei quæ te in utero novem menses portavi & lac triennio dedi & alui & in ætatem illam perduxì*: “ My son pity me who have born thee
 “ nine months in my womb, and have given thee
 “ suck three years, and have brought thee up to this
 “ age f.

However all sorts of strong food are not offered to children immediately after weaning; we should begin by the more soft, and proceed to the more solid food; that the viscera may be accustomed to these by degrees. They are eager for food, nay even voracious when in health; and though their teeth are strong enough, they can scarcely chew their victuals,
 but

^c Æginet. lib. 1. cap. 5. pag. 2. versâ Mosch. apud. spach.

gynæc. pag. 10. No. 113.

^f Machab. lib. 2. cap. 7. vers. 27.

but immediately swallow them. Amongst the lower sort of people, it is customary for persons to be present at the parents table, who are delighted with the voraciousness of the children, and present them with every eatable that offers. These things are thrust down the childrens throats indeed, but they are not digested: the crammed abdomen indeed swells, but the whole body is emaciated, and they often die cachectic.

Cleanliness however is chiefly required, that the whole skin may be always clean, and may not long remain defiled with filth or urine; for most dangerous rednesses of the skin, and troublesome consumings, are thence to be feared. But children are likewise frequently obnoxious to cutaneous disorders, whilst filth remains collected in the hollow of the skin, which is wiped away by absterfion, and sponges full of warm water and milk; and as this is done twice a day, care is taken that the same should not be again gathered on the skin. It has been observed, that children are more easily brought up and grow, if this cleanliness is properly attended to. *Fischer* happily cured a girl of an atrophy, by baths prepared of equal portions of water and milk.

It has been found of use to wash children with coolish water, and to accustom them by degrees to bear cold water: for thus the body is very much strengthened, and afterwards it is not easily affected by the changes of the seasonsⁱ. In general too softer an education, and those superfluous cautions which are recommended by mothers who are too careful, render the bodies weak, so that they afterwards feel the least change in the six non naturals. The queen of *France*, when she had destroyed a great many of her offspring by being over sollicitous in their education, by the advice of physicians, entrusted the infancy

ⁱ Aët. erudit. 1727. pag. 526.
variol. per Balnea, &c. curand. pag. 30.
au peuple sur la sante sect. 340. pag. 389.

^h De remedio rustic.
ⁱ Tissot avie

fancy of *Henry* the fourth to a countryman, and was desirous that he should use the same food and clothes with the offspring of country people : thus he proved robust, active, and capable of bearing fatigue. At least we have this from an authentic tradition ^k.

S E C T. MCCCLIX.

AS soon as children have got the better of these disorders, and begin to live upon flesh, ripe fruit, flesh, cheese and things of the like nature, worms are bred.

As soon as children are taken from the breast, and begin to use the ordinary food of grown persons, prudence directs that they should be gradually accustomed to more solid food, and that at first, such dishes should be laid before them as are easy of digestion.

It has been frequently observed, that children at this period of their lives, are troubled with worms : wherefore *Hippocrates* ^l, after enumerating the disorders of children newly born, and children breeding their teeth, said, that amongst other diseases, to which they are subject as they grow up, may be reckoned little round worms or ascarides. He does not here mention belly worms ; because he seems to be of opinion that this worm is coeval with man, as shall be shewn hereafter. *Galen* ^m in his commentaries upon this aphorism, maintained that such worms are not the product of seed, but of putrefaction, especially if there should be a great degree of heat at the same time ; and therefore he was of opinion that worms are rather produced in children who grow up, than in such as are just born and in sucking children ;
because

^k Brouzet. *educat. medic.* Tom. I. pag. 329.
26. sect. 3. charter. Tom. IX. pag. 121.

^l Aphor.
^m *ibid.* pag.

because there is a greater degree of heat in the former.

It indeed seems probable enough, that worms are more frequently observed in the adult, who live upon the ordinary food of the adult; but it cannot be denied that worms have been found in sucking children, and sometimes in new-born babes. The renowned physician *De Lille* ⁿ, *In propria filiola undecim hebdomadas nata, integros vermium nidos observavit, licet mater illi præter ubera nihilum neque lac coctum quidem, præbuisset*: “ Observed in his own daughter, a child “ of eleven weeks old, whole nests of worms, though “ her mother had never given her any thing but the “ breasts, not so much as boiled milk:” but as he had observed many symptoms of worms in this daughter, and that even from her birth, he could scarcely avoid thinking that the worms were born with her.

That excellent physician *Van Doeveren* ^o, collected many observations of fœtuses which had worms in their intestines whilst yet in the mother’s womb; his excellent dissertation is highly worthy of perusal.

A virtuous and well-descended matron, when she gave suck to a child three months old, declared to me, that she had often seen little worms come out of her son’s anus.

Whilst a child sucks, it swallows milk not yet exposed to the air; as soon as it feeds upon food exposed to the air, the eggs of insects may easily insinuate themselves into the body along with these; chiefly if the meat is eat raw and not boiled. Ripe fruits are often found full of worms; cheese often swarms not with small vermin, but with the largest. I knew a man, who as soon as he had eaten white cheese, two days after felt a troublesome itching about the anus, occasioned by copious ascarides. The cheese was that which was formed out of the whole milk,

ⁿ De cordis palpitazione, pag. 133.
de verm. intestin. homin. Lugd. Batav. 1753. pag. 31.

^o Dissert. inaugur.

milk, the cream not being first separated from it; for this reason it is fat enough, and of an agreeable flavour. If he could abstain from eating such cheese, or could but make use of a different sort of a cheese, that troublesome itching ceased in a short time, nor did the ascarides appear any longer.

For this reason, it does not seem surprising that animals come out of these eggs as soon as heat and moisture favour the exclusion. But yet the difficulty remains, that without the human body, human worms are not so obvious that one can be absolutely certain that the worms so often observed, are produced by the eggs of these being frequently swallowed, which subject shall be treated of in the following paragraph.

S E C T. MCCCLX.

THE cause of this arises from the eggs of insects that live in air or upon earth, being taken, and not to be destroyed by a gentle motion.

It is well known that it was an opinion of the antients, that worms and other animals, chiefly insects, may spring from putrefaction. But after that the wonderful and artful frame of insects was discovered, it appeared evident, that it was impossible that an animal should arise from rude and unformed putrefaction that has parts so numerous, so different, disposed in so extraordinary an order, always the same in number and situation, in the same species. Wherefore this opinion has grown totally in disrepute. Perhaps this opinion of the antients took its rise from insects frequently laying their eggs in rotten matter, or matter disposed to rot soon, that they might both be cherished by the heat that accompanies putrefaction, and that the worm creeping out
of

of the egg, might find it's nourishment prepared. Thus in the heat of summer, flies swarming in the air, lay thin eggs upon the flesh of slaughtered animals, and that very expeditiously: a pregnant fly contains in it's swelled abdomen, fifty eggs and sometimes more, which it can quickly scatter about upon the flesh that comes in it's way, and thus it quickly defiles the food of man, and with worms which are soon after to be born. But as it is a received opinion with many, that worms accompany putrefaction, they detest flesh in which a single worm is to be found. Certain it is however, that worms chuse tender and savory meat to lay their eggs in: they likewise know how to make choice of the best fruits, in order to place their eggs with safety in the soft pulp.

Nor do they spare living animals, but they pierce the skin which contains the egg, with a needle; under it they lay the egg; the worm emerging from the egg, gnaws the partitions of it's habitation, inflames the place, is nourished by the pus that follows the inflammation, grows, is changed into a bug, which being turned into a fly, pierces the skin, and flies away. Such exulcerations after a crisis have been often observed in heifers.

But a fly entering the nostrils of stags and sheep, deposits it's eggs in these cavities. Another species of flies hovers about horses, and when this animal voids it's excrements, enters by it's anus before the sphincter of the anus is closed, and places it's eggs upon the sides of the intestine. There are innumerable arts by which insects know how to provide for their offspring in such a manner, as to procure a convenient place, a due warmth, and such food as offers; upon this subject the reader is referred to what *Swammerdam*, *Valisnieri*, *Redi*, *Reaumur*, *Lionnet*, *Bonnet*, and others, with extraordinary industry and great labour, have collected.

When

When myriads of little animals have been so often observed in water, and in water where nothing of the kind was observed by microscopes, if it was exposed to the air, or poured in with the parts of plants, a great number of these would occur; it was from hence concluded, that the air which we breathe is full of living creatures. But as the earth swarms with these, it seemed the less extraordinary that the eggs of these, the taking of which seemed altogether inevitable, should multiply in the body.

But after that, the indefatigable industry of the greatest men had discovered the diversity of sexes in insects, and copulation, and in others both sexes united, which however joined in coition when some were delivered of living fœtuses, others were oviparous, it was thought to be an universal law, that insects should be propagated either by delivery, or by laying eggs. Whence it was inferred, that worms are generated in the human body from the small insects swallowed, or from the eggs which have entered our body. But when in viviparous animals, the eggs and ovaria were discovered, it was unanimously agreed upon: *Omne animal ex ovo esse*: "That every animal is generated from an egg."

But it was reserved to the most ingenious *Trembley*, so eminent for his knowledge of natural history, to observe another mode of propagation amongst insects. He had seen in water a sort of a little body, easily to be inspected by the naked eye, which in it's bulk and figure is not unlike the *Carduus Benedicti*, "*Benedict's thistle*," concerning which he was in doubt, whether it belonged to the vegetable or the animal class. It appeared upon a careful examination, that the diminutive body above mentioned, has local motion, that by putting out it's fins, it seizes little worms that float in the water, that when caught it brings them to it's mouth and swallows them: from

from whence he justly concluded that it is an animal, and he called it a polypus, and it resembled the fish polypus both in it's fins, and in the general form of it's body.

Rejoiced at this new discovery, he was still more surpris'd that another polypus of a like form is generated from the body of this little animal, just in the same manner as boughs issue from the trunk of a tree, grows quickly, and even whilst still sticking to it's parent, contends with it for food. Sometimes the polypus was of it's own accord separated from it's mother, swam alive, devoured little worms, digested them, threw them out. Sometimes whilst still sticking to it's mother, it generated a similar offspring in a similar manner, which in warm weather so became as fruitful as it's mother and grand-mother. Thus the sprouting polypus, wonderful to behold! exhibited to his eagerly gazing eyes, a sort of a middle nature between the animal and the vegetable kingdoms, as by it's local motion and seeking it's food, it resembled an animal, in propagation resembled a plant. For polypus grew out of polypus, just as the branches of a tree grow out of it's trunk.

But discoveries much more extraordinary were made. Whilst the polypus was cut in the middle, a new tail grew out of it's head, and a new head emerged from the extremity of the tail, which stuck to the trunk: the same reproduction was observed, if the polypus was cut in two, lengthwise. The admirable *Trembley* proceeded in this division and subdivision, till from one polypus divided into sixty parts, as many new ones were produced. Besides, with the highest dexterity, a dexterity not easily imitated by every one, he inverted the whole body of the polypus, so that the whole internal surface of the body, became the external; and on the contrary, the external occupied the place of the internal: even thus tortured, this animal devoured the booty that was offered

ferred it, as before, and a new offspring sprouting up, it afterwards appeared in it's branching form.

I have seen many of these wonders with my own eyes, whilst the first inventor of these things shewed them to me; some of them I endeavoured to imitate, following the footsteps of so great a master, though with unequal steps. Afterwards the same experiments have been tried upon other greater insects, and not without success, upon earth worms, horse-leeches, &c. though these did not prove quite so fruitful as polypusses.

We at least learn from thence not to lay down general rules too easily, though they seem to be supported by observations numerous enough. Perhaps a greater variety of concealed circumstances prove the contrary. It is certain that plants are generated from seeds; but there is not a single method only of propagation in plants; plants may multiply by the bark, the boughs, the leaves and the roots, though they likewise grow happily from seeds. It is well known that the roots of some plants being cut into parts, and committed to the fertile earth, give rise to a new crop. That species of aloes which is called the prolific, as I myself saw in the garden of the emperor, rears up a vast, branching stalk, which bears flowers; the flowers having fallen off, a great number of little new plants appear upon the branching stalk; which having fallen of their own accord, joyfully propagate their species. As in plants, there is not one, but many modes of propagation, may not the same thing obtain in the animal kingdom? Certain it is, that the polypus is not rendered fruitful by copulation; but in itself, and in each part of the dissected body, it has the power of producing it's likeness. The celebrated persons, spoken of above with applause, have observed that some insects are viviparous in summer, and oviparous in autumn: some were found which were fruitful, and brought forth living foetuses, and that without any commerce with

others : fœtuses coming out of their mother's womb were immediately preserved with care, alone, and covered with glass, and yet at a proper time they brought forth living fœtuses : this new offspring was in like manner kept alone, and yet was fruitful ; the same experiment succeeded for many successive generations.

Perhaps these and many other discoveries which we may hope for from the industry of such great men, will some time or other throw a new light upon the generation and propagation of worms in the human body. Let it suffice for the present to have just hinted at these things ; for we shall hereafter in sect. 1363, treat further of this subject, in speaking of such worms as first occur in the human body ; and these are those which we meet with in the ways of the first concoction.

As there is so great a number of insects, and the eggs both of the lesser and greater, can so easily get into the human body, it did not appear so very extraordinary that worms were frequently found in the stomach and intestines. But the difficulty seemed still greater, when they were found also in other parts of the body, which were not so easy to be approached. Whilst *Ruyfch*^a found the worms of eggs not in the liver only, in the cystic duct, the porus bilarius, and the gall-bladder (the passage of worms, to which place from the cavity of the intestines, seems by no means difficult) but had often seen them in the kidneys of dogs, and once in human kidneys ; nay, even in the arteries of living horses, and had read in authors of great renown, that worms have been found even in the brain ; he owns that he began to doubt : *An omnia ex ovo generentur uti Harvey ejusque sectatores volunt* : “ Whether all things are generated from an egg, as *Harvey* and his followers “ would have it.” But as the more solid sorts of food, undergo so extraordinary a change from the ac-

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^a Observat. anatom. chirurg. No. 64. pag. 60.

tion of the stomach and intestines, he acknowledged that he could not conceive how tender insects and their eggs, which had been subject to the action of these viscera, could remain entire. He adds this argument in proof of his assertion: *Quod nullus mortalium unquam ejusmodi vermes extra corpus viderit*: "That no man ever saw such worms without the body;" which subject shall be treated of hereafter. *Ruyfch* in his figures, has delineated a belly-worm taken out of a fish^r. The reader may likewise have recourse to what has been said of worms upon another occasion in sect. 916.

But the antient physicians, treating of worms, seem to have had a doubt, chiefly with regard to the belly-worm, which when it sometimes acquires so great a length as almost to equal all the folds of the intestines. *Aetius* said^s: *Est autem latus lumbricus, si ita dicere libeat, permutatio pelliculæ, intrinsecus tenuis intestinæ ambientis, in corpus vivum quoddam, quod continuos stomachi morsus infert & ad cibos incorrigibilem appetitum*: "But it is a long worm, if I may be allowed the expression, an alteration of the skin, which inwardly surrounds the small intestines into a sort of living body, which constantly bites the stomach, and excites an unsurmountable appetite.

Wonderful observations have been made concerning worms found in different parts of the human body. The celebrated *Du Verney*^t tells us, that a child of five years old, constantly complained of a violent pain about the root of the nose; she kept her bed three months with a slow fever; then violent convulsions followed: after her death, a worm was found in the longitudinal sinus of the brain, about five thumbs breadth long, and like an earth worm. It might perhaps be thought to be several polypusses growing together; such are often found in this sinus;

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^r Observat. anatom. chirurg. No. 64. pag. 60.

^s Sermon 9. cap. 40. pag. 173.

^t Acad. des scienc. l'an. 1700. hist. pag. 15.

this might deceive by the appearance of a worm, but adds, that that worm lived from six o'clock in the morning till three in the afternoon. It seems to have been of the smooth sort, which resembles earth-worms.

We read in *Baglivi*^u, in his epistle to the celebrated *Andry*, of a man of forty years of age, who was all of a sudden seized with violent pains in the stomach and the neighbouring parts; these lasted for eight days: afterwards he was both day and night convulsed every half quarter of an hour in his whole body, but it was only for a moment of time: with a paleness of the countenance, and a privation of strength. The wretched patient, being for eight days afflicted by these torments, all these symptoms suddenly ceased during about two hours; which being hardly elapsed, there succeeded a pain in the stomach and breast, so cruel and vehement, that he soon after died by its violence: the wretch said before his death, that his heart and belly were as it were torn by dogs. The corps being opened, a whole worm was found in the cavity of the pericranium, hairy, alive, and almost the length of the palm of the hand. The heart was very pale.

The celebrated *Senac*^{*}, when he had seen red polypous concretions exactly resembling worms in figure, treats of the history of worms, that nest in the heart, or the cavity of the pericardium in the middle; but he declares, notwithstanding what *De Capeironie* assured him of, that he had found in many dogs, bundles of worms rolled together between the basis of the heart and the pericardium; nay, even in the ventricle of the heart. Hence he concludes, that it is by no means impossible that these particulars may likewise have place in the human heart.

But as the heart sticks in a pericardium closed on every side, being fastened to no part of the body, unless

^u Oper. omn. pag. 699.
cœur. Tom. II. pag. 437.

^{*} Traite de la structure du

less to itself by vessels, the egg of the worm, or whatever else is considered as it's origin, should have been brought hither by vessels: but how thin are these vessels, which from the surface of the heart, and a thin membrane of the pericardium, exhale a subtile dew, which perpetually moistens the heart: the first thread of the insect should have passed through vessels still more subtile, if the worm had been found by *Adrian Spigelius*, in the glassy humour of an horse's eye ^y.

It is true indeed, that in stagnant waters, in infusions of plants, animals extremely minute are discovered by the microscope, which if they were mixed with our fluids, might with them pass through the smallest vessels. But no observations have taught us that these little animals can grow to such a bulk as to equal the palm of a man's hand in size.

It cannot therefore seem wonderful, if so many difficulties have been raised by men perfectly skilled in natural history, against the generation of human worms, from the eggs which get into the body. It is not my business in this place to examine all particulars, as it is sufficient for the physician to know the symptoms which shew that those dangerous guests take up their residence in the human body, to foresee the ills which arise from thence, and to know the method and remedies by which they are driven out of the body. But the reader may have recourse to what has been said upon these difficulties ^z. Chiefly in *Clark*, where a collection of these may be read. *Swammerdam* ^a so quick-sighted, so diligent in examining these things, after he had considered all things, said: *Difficillimum quidem est explicatu, quam ratione vermes in animantibus viventibus generentur, &c. quantum ad me attinet, fateor ego tam pauca mihi circa hanc*

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^y Bonet. sepulcret. lib. 1. sect. 18. observ. 6. Tom. I. pag. 422.

^z Academ. de scienc. l'an. 1709. hist. pag. 36.

Dan. Clerici histor. natur. & medic. lator lumbric. lib. 1. cap. 14. pag. 546. & seq.

^a Bibl. natur. Tom. II. pag. 708, 709.

rem experimenta solida suppetere, ut hætenus nihil omnino in ea videam: etiamsi multos modisque multifariis constitutos vermes in viventibus & se moventibus, tam terrestrium quam aquatiliū, & aeriorum animalium corporibus conspexerim. Attamen nihil solidi quidquam certive hic pronunciare valeo: “ It is the most difficult thing
 “ in the world to explain by what means worms are
 “ generated in living bodies, &c. I acknowledge
 “ for my part, that I have met with so few satisfactory experiments in this matter, that I have not
 “ yet any thorough knowledge of the subject: although I have seen many worms, and worms of
 “ various forms in the living and moving bodies of
 “ terrestrial, as well as aquatic and aerial animals.
 “ But I cannot in these matters come to any solid
 “ and certain determination.”

It is not therefore to be wondered at, if men of learning have adopted different opinions whilst they investigated the origin of human worms. Some have thought that worms can scarcely be looked upon as a disease. A bag full of living worms was found in the upper part of the stomach of a scaly *Indian* lizard, which equalled a small needle in length and thickness, the number of these came very near a thousand; nor did they seem to be the symptoms of a disorder, as just such another bag of worms was found in another lizard of the same species. A quantity of worms was likewise found in the stomach of a tyger^b. Which has been confirmed by later observations. As a certain species of insects is familiar to each species of animals, and even of plants, they were therefore inclined to think that worms are some way or other beneficial to the human body, or that they convert those particles of our bodies to their use, which we can easily spare, and thus live at our expence, but without doing us a prejudice. They thought they would then only prove hurtful, when being increased in number, or being for some other reason

^b Acad. des scien. l'an. 1703. hist. pag. 47.

reason destitute of food, they gnawed or irritated the neighbouring parts. *Hippocrates*, as we shall hereafter shew, thought the belly-worm coeval with man. It will appear however from what follows, that worms are not altogether free from danger; although it cannot be denied, that sometimes a quantity of worms issues from the human body, which do not any way appear to indicate a disorder.

Mon. *De Buffon*, so much celebrated for his natural history and description of the king's cabinet of curiosities, after he had considered the discoveries made by the acute *Needham* in the seminal vessels of the *polypus*, the *cuttle* and the *calamary*^c, was of opinion that all bodies that live and vegetate, might contain some organical parts, endued with life indeed, but which were neither animals nor vegetables, but a medium between both. The little animals called spermatic, he maintained to be little organical masses, which though endued with motion, were not animals. He asserted, that in aliments composed of vegetable and animal parts, such particles lay hid, as might with the assistance of a certain internal model, be formed into little living organical masses; the remainder, a sort of unformed materials of aliments, those little active particles being separated from them, and they being become useless, are driven out of the body. To these little masses, he ascribed the growth of the body, and the restitution of the lost parts; he maintained likewise, that a collection of these stuck in the places set apart for this purpose, and constituted the seed of animals. He also thought that the same organical masses, if they were collected in places where they could be united to each other, and could be in the way in a large quantity at once, that then they could in the body of an animal, be formed into other animals; such are belly-worms, ascarides, the worms sometimes found in the veins and sinus's of

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the

^c Nouvell. decouv. par le microscope de T. Needham, pag. 60. & seq.

the brain, the liver, &c. but these animals do not owe their existence to other animals of the same species; for they are not generated in the same manner with other animals; but they are produced by that organical matter which serves to nourish the body, if it be extravasated or not sucked back by the vessels. For he thinks it probable enough, that that generating and always active matter, tending always to organization, produces worms and other diminutive bodies of a different species, according to the diversity of places and matrixes, in which it it accumulated.

The refined observations of that great man upon this subject, are worth reading^d.

In the mean time, this opinion, though ingenious, does not seem to be without great difficulties.

So that now the more common opinion prevails, that human worms owe their origin to the eggs which come from abroad into the human body, and are multiplied in the body itself, as is customary with other animals^e. *Quamquam vero & hæc sententia suis vexata dubiis, quæ expediri ægre queant; non sunt tamen ista tanti momenti, ut non sperare liceat, ulteriori scrutinio tandem ad liquidum perductum iri. Quod ipsa natura dictavit systema, non ilico turbandum si qua forsan parte ob cognitionis humanæ defectum hiat:* “ But
 “ though this opinion likewise is perplexed with it’s
 “ doubts, which can with difficulty be solved, they
 “ are not however of such importance, that there
 “ may not be room to hope that by a farther disquisition into them, they may at last be cleared. The
 “ system dictated by nature itself, should not be disturbed, if it appears in any part deficient on account of the narrow limits of human knowledge^f. ”
 But this opinion supposes, that animals like these, have

^d Hist. natur. gener. & particul. Tom II. pag. 18, 19. & seq. & pag. 258. & seq.
^e Van Doeveren dissert. de verm. intest. pag. 25. & seq.
^f Gaub. institut. patholog. sect. 587. pag. 302.

have an existence without the human body, of which subject we shall treat hereafter in sect. 1363.

S E C T. MCCCLXI.

THE intestinal or gastric mucus, affords them a receptacle to which they stick, are fostered, bring forth and multiply.

As human worms are chiefly found in the *primæ viæ*, and it is the most received opinion (as has been said already) that they owe their origin to the eggs taken in, it seemed probable that these must be destroyed by the peristaltic motion, or at least must be forced out with the other excrements by stool, except they were to stick to the sides of the intestines, whatever cause this sticking might be owing to.

It is well known that the stomach and intestines, are covered over with a glutinous matter, but beneficial and natural, by which their internal surface is lubricated and anointed; at the same time it is defended from all acrimony, as well as toughness of the food taken in, which in men of a voracious appetite, is not sufficiently chewed before it is swallowed. This slimy matter might afford a tolerably convenient bed for the eggs of worms, in which they might be fostered, and by which they stick to the sides of the intestines, in such a manner, that they can neither be moved out of their place by the peristaltic motion of the intestines, nor by the victuals and excrements passing through the cavity of the intestines. But as this slimy matter abounds in young persons; hence it is thought, that they for this reason, are oftener troubled with worms than others. It is not therefore surprising that worms have often been found covered all over with such slimy matter.

S E C T. MCCCLXII.

HENCE they are uncommon in grown persons, and of these none are troubled with them, but the heavy and phlegmatic.

But as the body is more dry in grown persons, as the bile and all the humours that run into the stomach and intestines are more sharp than in young persons, hence they are less frequently troubled with worms, except there are slow, cold, pituitous humours in the body in great quantities, as is observed in those who are called leucophlegmatic by physicians. See what has been said upon this subject in sect. 69, and the following sections, where the spontaneous glue was treated of.

At the same time, it is certain that all grown persons, let their bodily constitution be ever so good, are not troubled with worms. When the whole body is firm, and the nervous system less easily irritated, they often do not feel such pain from worms as young persons are used to feel: for this reason, they are often troubled with worms unknown to themselves, these are driven out by medicines, especially by purging medicines; sometimes too they are voided at the time of acute disorders. Wherefore Hippocrates said^s: *Sed et lumbricos teretes, morbo judicium subeunte: una cum excrementis prodire, utile fuerit:* “ But it is beneficial that smooth worms should be voided with the excrements, when the disease comes to a crisis.” But as at the time that the disease comes to a crisis, there are many disorders in the body and great changes of the humours; it is not surprising that smooth worms that are very moveable, should be driven out of their place of residence. So that this forcing out of worms, seems to denote a critical perturbation; it however has not always

^s In prognostic. charter. Tom. VIII. pag. 628.

ays a good effect. But if the humours, corrupted by a severe disorder, should rush out copiously by stool, worms are at the same time forced out, but with a very bad effect. Thus in *Hippocrates*^h, we read of a man who supped when he was heated, drank a great deal, and then being seized with an inflammatory pain in the upper part of the abdomen, had an acute fever attended with bad symptoms: *Septimo die ab alvo irritata liquida & turbulenta cum umbricis secesserunt*: “On the seventh day, irritated and disturbed humours, were voided with worms;” but without any diminution of the symptoms, and on the eleventh day he died.

Thus it was observed at *Beziers*, in the year 1730, that many were afflicted by a heap of worms in the manner of an epidemic disease. For though at other times, the inhabitants were frequently troubled with worms; that year, persons of every sex, age and constitution were afflicted with them, and that to such a degree, that some of them died, recourse being had to all sorts of remedies to no purpose; and pretty strong ones should be given, that the worms might be forced out either upwards or downwards, many of which came alive out of the bodyⁱ.

It has often been observed in camps, that worms have been voided by soldiers ill of the bloody flux, intermitting or remitting fevers. The worms that were voided in these disorders were smooth^k. The excellent author tells us at the same time, that we should not think that these worms occasioned these fevers or the bloody flux, but only made these disorders grow worse. The same thing has been observed in our army. Hence it appears, that in grown persons also, whose bodies have been exercised by fatigue, there are worms which would not have come out

^h Epidem. lib. 1. text. 12. ægrot 12. charter. Tom. IX. pag. 14.

ⁱ Academ. de scienc. l'an. 1730. hist. pag. 57.

Pringle observat. on the diseases of the army, part 1. chap. 1. pag. 10. chap. 3. pag. 30.

out, if they had not been attacked by these disorders. But it seems very probable that these worms had an existence before the disease.

Add to this, that the belly-worm or broad worm is frequently observed in grown persons.

S E C T. MCCCLXIII.

AND they are round worms, broad worms, ascarides.

These three sorts of worms frequently occur in the human stomach and intestines, wherefore we have treated of them chiefly in giving the history of worms, and pointing out the method of curing them, though it cannot be denied that other sorts of insects have been found in these places. For if the fruitful eggs of other insects have been carried to these parts, it does not seem surprising that they should be forced out in such a moist and warm place. Many observations occur in medical history of frogs and lizards, thrown up by vomiting, or voided by stool for in standing waters at the spring of the year, there is the spawn of frogs, and these waters are sometimes drank unwarily by thirsty persons. From such or a similar cause, those insects seem to be produced which being but little different from what are vulgarly called human worms, are found in the human body. An Indian of thirty-six years of age, had long been troubled with a violent pain in the belly: as the Indians are often troubled with worms, the physician prescribes such medicines as destroy them, which are called *semen contra*, that is to say, seed against the worms. Soon after taking this remedy, the pains are diminished, and the patient voids by stool a dead worm seventy-six thumb's breadth, and four lines in length, and four lines thick. That worm was round, of a colour between pale and yellow, and from the head almost to the tail, there were reckoned an hundred and seventeen cartilaginous rings, all entire.

This

This womb being driven out, the pain ceased entirely, the ruddiness of the complexion returned, nor did he afterwards complain any longer¹. It is obvious enough, that that worm is entirely different from smooth human worms.

We meet with another surprising example^m. A noble youth, the only son of a mother who was a widow, was troubled with worms, and with violent pains in the belly, convulsions, &c. The unhappy youth perceived, as he thought, that a serpent crept in his stomach, he felt his viscera torn by it's biting. All the symptoms were aggravated by purgative bitter remedies, and such as are given for the worms : nay, convulsions followed, when scammony was given. That celebrated physician, seeing that all the bad symptoms were increased by irritating remedies, gave the patient a large quantity of milk, which being drank, all the pains were quickly assuaged, and when returning, they were assuaged in like manner by drinking milk again. A purge was again given by another physician, but all the bad symptoms grew worse ; milk being drank, they again ceased, and the afflicted mother committed the care of her son, entirely to the celebrated *Gallo*, who endeavoured to notice the worm by the smell of milk towards the mouth, in hopes that it would come out of it's own accord, or might be pulled out. This method proved successful : for at the third attempt, the worm ascending to the root of the tongue, and being seized by a pair of pincers, was pulled out. That worm was black, round and hairy, thicker than a writing pen, and thirty *Italian* spans in length ; it was preserved by the physician as a curiosity.

A man was troubled for two years with very violent cholic pangs, and an almost insatiable hunger. He voided by stool a great quantity of smooth worms, and sometimes whole clusters of them. Pills

were

¹ Feullee journ. des observat. phys. &c. Tom. I. pag. 421.

^m Gallo dissertaz. del uso del latte. Tom. II. pag. 133 & seq.

were prescribed to be taken at certain intervals of time, together with a certain decoction. The patient being wearied out with his sufferings, took the remedies oftener than they were prescribed; when faintings and syncope followed, so that he seemed at the point of death. At the same time the abdomen made so loud a noise, that it could be heard at the distance of thirty paces and more. At last, worms came out, some of which were pretty long, especially the last, which was thought to be the most dreadful enemy to the patient. This worm came out alive sixteen feet long, keeping it's head erect half a foot above the ground, whether it crept on the earth, or lay rolled up in a circle. Being put into a vessel full of water, it moved in a wonderful manner, always keeping it's head which was black, and round like a pea, erect: it had a neck very narrow, and two eyes; it had protuberances like vertebræ. The patient at last perfectly recovered, praising his rashness, which perhaps was necessary to effect the cure, or at least accelerated itⁿ.

There is likewise a description of a worm which came out at the anus half a foot in length; the whole worm was full of blood; whilst it came out, some pounds of blood came out with it, and for a few days after, a certain quantity of blood run out at the anus. This worm came out dead, and had rings like an earth-worm. The head was narrower than the rest of the body, the mouth triangular, like a horse-leech. The patient afterwards declared, that he had voided another worm of a greater magnitude, which came out bit by bit. This worm was seen by credible witnesses, and being drawn by a skilful painter is exhibited in effigy.

I might easily collect many such instances, but let these suffice to ascertain, that in the human stomach and intestines, there are sometimes found other im-

fect

ⁿ Acad. des scienc. l'an. 1740. hist. pag. 72.

• Medic. essays & observat. Tom. II. artic. 26. pag. 336.

sects besides round, broad worms and ascarides; of each of which we shall now treat.

The round, they are likewise called smooth; they are oftener found in the intestines than other human worms; but as in their external form, they have a considerable resemblance to earth-worms, a large quantity of which is to be found every where; hence many have been induced to think that the smooth worms are generated of the eggs of earth-worms, in whatever manner those may have entered the human body. Thus the celebrated *Linnæus* ^p would have: *Lumbricum intestinorum esse eandem speciem cum lumbrico terrestri vulgatissimo*: "That the worm of the intestines is of the same species with the commonest earth-worm." *Scopoli* ^q so well versed in natural history, has adopted the same opinion. *Docet hoc communis utriusque fabrica, habitatio, vita, fecunditas & communia utrisque venena*: "This appears from their having one common form, habitation, life, fruitfulness, and their common poisons." Their fruitfulness is much the same, but neither are their habitation nor their manner of living the same. Earth-worms take up their residence in the earth, they feed upon the earth which is found in their bowels, and is thrown out by stool: human worms dwell in the bowels, and feed upon very different food. Earth worms have red blood ^r, and *Swammerdam* discovered in them feet, or something like feet. He maintained indeed, that their opinion is ridiculous, who assert, that the worms in us take their rise from the eggs swallowed, as they require a very different sort of food. But he thought however, that it is not possible if the eggs of such insects as have lived in the intestines of other animals, are taken into the human body ^s. Human worms, as far as we can now, never suffer any metamorphosis, nor even earth-

^p In system. natur. pag. 85.

^q De Hydrarg. Idriens.

antamin 157.

^r Swammerd. bibl. nat. pag. 120, 247.

bid. pag. 710.

earth-worms. Yet it is not impossible, that insects may in the very intestines of animals, suffer a metamorphosis. The fly which was spoken of in sect. 1360, enters by the anus of the horse, lays it's eggs, from which a worm issues, which at a proper time is to be changed into a grub, from which a fly comes afterwards.

But in other animals are found smooth worms like human worms, which shall be treated of hereafter. The celebrated *Vallisner*, found round worms in the intestines of calves, and that of calves who were still sucking the teat; he dissected them with all the dexterity he could, and found that the structure of them was different from that of earth worms: he saw true eggs, but in a very great number^t. I cited *Clark*, because the observations of *Vallisner* and *Redius*, are to be found collected in this author.

The admirable *Edward Tyson*^u, dissected smooth human worms, and found them entirely different from earth-worms. He thought he had discovered a diversity of sex in smooth worms, and by figures delineated the male and female dissected: he delineated the seminal vessels in both sexes, and the eggs as seen through a microscope; of these, he believed, there were more than ten thousand in one worm. It is reasonable to imagine, that this quantity of eggs is not hatched in the body; it seems probable, that many of them come out with the excrements; and if these afterwards any way enter the human body, or the body of other animals, the species may be propagated, as they then obtain the habitation, and the food to which their parents have been accustomed. A surprising observation of the celebrated *Lister*, seems to favour this opinion^x. A girl had an ulcer of eight years standing near the ankle, which gave her great pain; a surgeon cut up a young puppy, and put

^t Dan. Cleric. hist. natur. & medic. lator. lumbric. pag. 222, 252.

^u The Philosoph. Transact. &c. abridged, Tom. III.

pag. 130.

^x Ibid. pag. 132.

put it upon the ulcerated place; when he afterwards removed it, he found at least sixty worms, some of which were lodged in the dissected body of the puppy, and some of them he took out of the ulcer in the ankle: the puppy was again applied to the ulcer, and when it was removed the second time, *Lister* was present, and saw but one worm, but that had a great deal of life in it: recourse being afterwards had to injections, many worms were killed. Examining these worms, he said what follows: *Affirmo, hos vermes, quantum cognoscere potui (Et habui opportunitatem illos comparandi) esse ejusdem speciei cum lumbricis teretibus quos infantes frequenter per alvum reddunt; tres quatuorve circiter pollices longi erant; omnes fere ejusdem crassitici; ac si eodem tempore fuissent exclusi; parum crassiores anatis penna; utrumque extremum in apicem acutum desinebat; vermes illi erant rigidi, perfecte rotundi, absque incisuris; Et tamen facile se movebant (vivi nempe.) Vermes illi magis albicabant, quam teretes intestinorum:* “ I maintain that these worms, “ as far as I could acquire any knowledge of them, “ (and I had an opportunity of making the comparison) are of the same species with the smooth “ worms, which children void by stool; they were “ three or four thumbs breadths in length; they “ were almost all of the same thickness, as if they “ had been hatched at the same time; they were a “ little thicker than a duck’s feather; each extremity “ ended in an acute top; these worms were hard, “ perfectly round, and without notches; and yet “ they moved with ease, such of them as were alive. “ These worms were whiter than the smooth worms “ of the intestines.” Whence it appears, that the smooth worms can live upon the juices of the human body, not in the stomach and intestines only, but in other parts of the body.

It is true indeed, that flies sometimes lay their eggs in ulcers; but worms of so great a magnitude, are not generated from these, but much smaller ones.

Nor does there seem to be any room for a suspicion, that those worms lay hid in the puppies intestines. The testimony of *Lifter* is of great weight, as there could not be a properer judge of such matters, and as he had examined this subject with the utmost care. Therefore the eggs of these worms were either with the humours carried to the ulcer by the vessels, or they must have come from without to the ulcer; in which case, round worms or their eggs might subsist even without the human body.

It does not seem a probable opinion that round worms are coverings of belly-worms^y, though it is ascribed to the celebrated *Fritschius*. An accurate dissection of the smooth worm shews the contrary for the belly-worm was not found lurking under a cover, but there was found an alimentary duct, anus, a mouth, and a fine apparatus of seminal vessels, &c. It is well known that insects, whilst they lie hid under the form of a grub, receive no nourishment, nor even move with that vivacity that has been observed in round worms, that creep through all the intestines to the stomach, and from the stomach return to the intestines.

But though the eminent authors, of whom honourable mention has been made above, found real eggs an observation occurs^z, which seems to prove that smooth worms are viviparous. *Puella Scarintii, quum vermibus quoque laboraret, & illi tarde datum esset medicamentum, unum præmagnum egressit vermen rotundum, cujus cum pater pede calcasset caput, ex eo alii prodierunt vermes: puella tamen brevi mortua est:* “ When
“ a girl of *Scarintium* was troubled with worms, and
“ remedies were given her somewhat of the latest, she
“ however voided one very large round worm; and
“ when her father trod upon it's head with his foot
“ other worms came from it: the girl however died
“ soon after.”

This

^y Van Doeveren de verm intest. pag. 24.

^z Amat. lufit. curat. medicin. cent. 1. No. 46. pag. 513.

This is but a crude observation, and depends upon the word of the father, who was doubtless ignorant of things of this nature. For if a smooth worm is shewn to the ignorant, through the coverings are plainly seen white feminal vessels, rolled up in a variety of shapes, which in figure have a sort of resemblance to the lesser worms that lie hid in a great one. Add to this, that in round human worms, distant about a third part of the whole length from the head, there is a chink (which in the smooth worms of calves is nearer to the head) by which, when the worm is trod upon, the whole system of spermatic vessels may slip away. I have in my possession such a smooth worm, entire, whose vessels all hang from that chink, and freely fluctuate in the liquor in which it is preserved. Nor is it an inconsistency, that round worms should be both viviparous and oviparous, as it was before observed, that there are insects, which at one season of the year are viviparous, at another oviparous.

But round worms generally equal a writing pen in thickness, they seldom exceed it, and they are sometimes smaller: their length varies; it very seldom exceeds a foot. I remember having seen one that was a foot and a half in length. Take notice that we treat here of round worms, properly so called; for under this same head, it was observed, that sometimes worms of a different species, which greatly surpass round worms in size, are voided upwards or downwards. The worm which is described by *Andry*^a, seems to have been such an one. For that eminent person acknowledges, that it differed from a round worm, in that it was wrinkled all over, and very plainly appeared to have a jaw.

The broad are likewise called belly-worms from their smooth figure, and the length of the whole worm, which is often immense. It is also called *Vermis solitarius*: “The solitary worm:” because it is thought to be always alone, and to equal the whole

C c 2

length

length of the intestines: this was the opinion of *Hippocrates*^b, who maintained that the broad worm is generated in a child whilst it is yet in the womb. He imagined that worms owe their origin to putrefaction, and as in a child just born: *Si sanus futurus sit, besternum stercus semper cunctis diebus excernatur*: “ It is to prove healthy, the excrements are every day voided that had been collected the day before.” Hence he inferred, that the matter to be putrified neither stays long enough, nor was in a sufficient quantity, for so long a worm to be formed in the intestines: the case was different, when the child lying hid in the womb, did not once evacuate by stool for the space of nine months. He takes notice that things are given to new-born children which drive out the excrements; he then adds: *Multi sane pueri tum rotundos, tum latos, lumbricos, una cum primo stercore, per alvum excreverunt*: “ Many children have with their first excrements voided by stool worms, as well round as broad.” Such worms were certainly generated in the womb, and it was said before, that this has sometimes been done. He adds. *Et teretes quidem pariunt; lati vero non amplius; etsi eos parere dicunt. Quicumque enim homo latum lumbricum habet quale cucumeris semen alias atque alias cum stercore dejicit; Et sunt homines qui hoc lumbrici partus esse affirmant. Mibi vero qui talia profecerunt haud recte dicere videntur. Neque enim ab uno animali tot pulli nasci possunt, neque tanta est in intestino capacitas ut partus educare queat*: “ And the smooth worms breed, but the broad do not, though some say they do. For every man who has a broad worm, voids every now and then, bits of excrements like cucumber seeds, along with the faeces, and there are some who maintain these to be the offspring of the worm. But in my opinion, those who speak thus, do not speak rationally. Neither can such a number of young spring from one animal, nor is the capacity

^b De morb. lib. 4. cap. 15. charter. Tom. VII. pag. 613.

“ capacity of the intestine so great, that the offspring
 “ can be nourished and brought up in it.” For he
 was of opinion that the broad worm grows with the
 child, and equals the length of the intestines at the
 age of puberty ; but as the broad worm continues to
 grow : *Per rectum intestinum cum stercore excernitur et*
velut cucumeris semen excidit ; plerumque etiam major.
Nonnullis vero iter facientibus aut vehementer laboranti-
bus & ventre incalescente, deorsum prodit, ipsisque ex
recto intestino inflatus prominet, idque facit & ex ano re-
secatur aut retrocedit. Quod vero non pariat, sed velut
ego dico, se res habeat hæc signa sunt. Quod si quis ho-
minem verme (latè) laborantem curet & medicamentum
aut potionem dederit ; siquidem homo probe præparatus
fuert, totus rotundus ut globus prodit & homo sanus
evadit. Si vero ad medicamentum prodeat & recta
(pars) abrumpitur duorum aut trium cubitorum longitu-
dine aut etiam longe major. Quumque abruptus fuerit,
multo tempore cum stercore nulla se produnt signa, postea
vero increſcunt : “ It is excreted with the excrements
 “ by the rectum intestine, and it comes out like
 “ the seed of cucumber, often bigger. It is voided
 “ downwards by some whilst they are on a journey,
 “ or when they are excessively fatigued, and their
 “ bellies are warm, and it comes swelled from their
 “ rectum intestine, and when it does this, it is
 “ either cut from the anus or shrinks back. But
 “ these are signs that it does not breed, but that the
 “ thing is just as I say. If any one should attend a
 “ man troubled with a broad worm, and should give
 “ him a medicine or a potion ; if the man should be
 “ well prepared, as soon as the whole round globe
 “ comes out, he recovers his health. But if it should
 “ come out upon the medicines being given, the
 “ straight part is broke off the length of two or three
 “ cubits or more. And when it is broke off for a
 “ long time, no symptoms appear with the excre-
 “ ments, afterwards they gain ground.” From
 what has been said, it is evident that *Hippocrates* was

well acquainted with the broad worm, and at the same time the reason is plain why he thought it solitary; it is because that worm alone occupies the whole length of the intestines. Many physicians, and amongst them the celebrated *Andry*, have adopted the opinion of *Hippocrates*, which *Dionis*^c has refuted, who saw two belly-worms, each wrapt up in it's peculiar membrane, come from a man who was totally emaciated, and worn away with a slow fever: in the space of fifteen days his strength and appetite returned, and he was restored to perfect health^d. There are many observations which shew that the belly-worm is not always solitary, but that sometimes several take up their residence in a man's body at the same time^e.

Many belly-worms are frequently found in the bodies of other animals; in dogs, I myself have seen three in different parts of the small intestines and parts at a sufficient distance from each other. The celebrated *Lifter*^f declares, that he had found in a dog above a hundred broad worms, insomuch that the intestinum duodenum was distended, being very full of them. In a mouse, he found the duodenum, which greatly surpassed the stomach in bulk, filled in like manner with broad worms, but they were of as different forms as any he had ever seen. In that dog there were likewise belly-worms in the jejunum and ileum, but they were at some distance from each other; in the great intestines there were none. In the jejunum and ileum there were belly-worms, sometimes single, sometimes in pairs, and sometimes several were rolled up together. Near these worms he always found their excrements, which were of a greyish colour. The smaller extremity of each was turned

^c Differtat. sur le Tornia ou ver plat. pag. 14. & seq.

^d Ibid. pag. 21.

^e Van Doeveren differtat. de verm.

intest. pag. 39.

^f Philosoph. transact. abridged, Tom. III,

pag. 119.

turned upwards, as if they gaped for the chyle as it descended. All those worms were of the same length, they did not exceed a foot. The broadest extremity in breadth, equalled the nail of the little finger, and ended like the point of a little spear. If the two parts of the whole length of the worm be measured from this broad extremity, then the joints begin insensibly to become narrower and narrower, and at last end in a small extremity, whose top ends in a globe which equals the head of a pin in bulk. He compared these belly-worms of dogs to the figure of a human belly-worm, which is to be seen in *Tulpius*^g; and he found a great resemblance. What *Tulpius* affirms concerning this grub, appears to be highly worthy of notice: *Idque non semel atque iterum, sed tertium; quippe toties hoc insectum excrevit uxor Gulielmi Smitii. Modo quidem frustulatum & mutilum, sed interim ter integrum & omnibus numeris absolutum. Erat autem caput hoc non minus acutum quam planum et ore admodum exili, plane eadem forme, qua ejus Iconem, dum adhuc reperet, æri incidit Salomon Saverius, artis ejus abunde peritus:* “ And that not once or twice, but “ the third time; for this insect was so often voided “ by the wife of *William Smith*. Sometimes bit by “ bit, and mutilated but three times, entire, and in “ every respect compleat. It’s head was not less “ acute than smooth, it’s mouth was very small, and “ it’s form just the same that *Salomon Saverius*, a “ skilful graver, represented in a copper-plate whilst it “ crept upon the ground.” The plurality of belly-worms in the human body, is confirmed by this observation of *Tulpius*.

But the broad worm is sometimes attended by worms of other sorts. Thus *Raulin*^h observed, that a man who was troubled with a belly-worm, voided smooth worms by stool besides. *Wepfer*ⁱ found in a

^g Lib. 2. observat. medic. cap. 42. pag. 161.

^h Des malad. occas par les variat. de l’air, pag. 420

ⁱ Cicut. aquat. histor. & noxæ, cap. 12, 186.

cat, killed by eating the *Indian* fruit called *coculus* :
Vermem latum adhuc vivum & plures lumbricos teretes :

“ A broad worm still living, and several smooth
 “ worms.” In a strong wolf of six months old,
 killed by eating the root of wolf-bane, he observed
 as follows : *Duodeni & jejuni superficiem incrustabat*
substantia coagulo lactis similis, alba, viscida, alicubi
flava. In ileo continebantur cucurbitini vermes solitarii
semen cucurbitæ figura & magnitudine referentes, coha-
rentes, duas spithamas longi, desinentes in filamentum
prope spithamæ longitudine, in cujus extremo globulus,
caput acus referens ; item tæniæ seu lumbrici lati, omnes
adhuc viventes : “ A substance resembling coagulated
 “ milk, white, viscid and partly yellow, incrusted
 “ the whole surface of the duodenum and jejunum.
 “ In the ileum were contained solitary worms, like
 “ those found on gourds, resembling the seed of the
 “ cucumber in figure and magnitude, sticking toge-
 “ ther, being two spans in length, ending in a little
 “ thread almost a span in length, in whose extremity
 “ there is a little globe which resembles a pin’s head :
 “ also belly-worms or broad worms, all still living^k.”

This observation comes pretty near the description of *Lister*, which I have just laid before the reader ; but it is surprising that he should make a distinction between worms, such as are found upon gourds, which stick together and end in a thread, whose extremity ends in a little globe, and broad worms. The plurality of broad worms however, is confirmed by *Webber*’s testimony.

There seems to be a variety of different sorts of belly-worms. The celebrated *Andry*¹ has described two : what distinguishes the first, is that the joints which constitute the length of the belly-worm, are long enough in the midst of it’s body ; hence there is a sufficient distance between one joint and the next ; but towards the extremities, these joints are nearer
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^k Ibid. cap. 11. pag. 180.

De la generat. des vers. pag. 194, & seq.

to each other, chiefly at that extremity which he calls the head, and which ends in a sort of a globe, where they are not far distant from each other: his figure of such a belly-worm may be had recourse to^m. A sort of nipple is to be seen in the midst of every joint at it's very edge, which has a hole in the top, in which he observed a blueish vessel, which reaches as far as the midst of the bodies breadth. But those nipples are distributed in an unequal order; sometimes there are two on one side, and but one on the opposite side; sometimes there are three on one side, and none on the opposite side. Another species of the belly-worm is described by the same authorⁿ, and differs from the former in that it's articulations are less prominent and less distant from each other; hence that part which is in the middle between two articulations, is shorter than in the former sort. At the same time, there is a series of little knots or rough grains, which are placed along the whole length of the broad worm, in a right line, in figure resemble the back bone. The celebrated *Andry* has given figures of many such broad worms.

Besides these two sorts, *Dionis* ° has discovered a third, which sticks to a little membranous sack being shut up in it; which being broke, it bursts out. When such a broad worm comes out at the anus sticking to it's little sack, it then might naturally be taken for a smooth worm; and perhaps this may have given rise to the opinion already mentioned, that smooth worms were the coverings of the broad worm. That accurate and dexterous anatomist *Winslow* p, dissected a worm, which resembled a smooth worm, and found that a belly-worm was contained under that covering. Broad worms have been found in the livers of mice, but they were shut up in a sort of a chest

^m De la generat. des vers. preface, pag. 4.

ⁿ Ibid. pag.

195. ° Dissertat. sur le tænia, pag. 21.

p Ibidem.

chest^a. But the figures of these worms seem to differ from those of the broad worms.

Perhaps other sorts of broad worms may be discovered by the industry of acute observers.

This surprising animal has greatly exercised the sagacity of philosophers; some would have it that the broad worm is not a single animal, but an heap of animals: but as those who are troubled with this worm, often void at the anus those worms which are called cucurbitine, because their figure very much resembles that of the gourd-seed which is sold in shops^r; representations of which, both living and dead, are to be seen in the place already cited; as it is manifest that they move, and are sometimes voided in so great a quantity, that a sick person who had a belly worm in his intestines, once shewed the celebrated *Andry*^s a large box full of these worms; hence they have been looked upon by some, as the eggs or foetuses of the broad worm. Besides when the broad worm is pulled in such a manner, that the joints are mutually separated from each other, then each joint represents a cucurbitine worm^t; wherefore we should not be surpris'd that some have been of opinion, that the broad worm is only a chain of cucurbitine worms; what favoured this opinion was, that frequently many ells of broad worm came out at the anus, though nothing analogous to the head or tail, was found in the extreme parts; nay more, because frequently similar fragments of the broad worm came from the same body at different times, which may be easily explained, if cucurbitine worms mutually joined to each other from the belly-worm. Some would have it, that the cucurbitine worms, are not only mutually joined to each other, but that after this union, they no longer constitute a numerous heap of worms, but one animal only, formed by the union of several; so that

^a Hist. natur. &c. avec. la descript. du cabinet du roy, Tom. VII pag 315.

^r Andry generat. de vers. pag. 224.

^s Ibid. pag. 218.

^t Ibid. pag. 219.

that whilst new cucurbitine worms are joined to the broad worm lengthways, it's length might be increased immensely; thus the broad worm grows continually, and though many yards should come out by stool, that loss is quickly and easily repaired. For though this growing of several animals into one, seems almost incredible, it may be answered, that in this age, so many new and wonderful things have been discovered with regard to the generation of insects, that from hence forward, it would be presumption to pronounce any thing impossible. For if any one had formerly been so bold as to assert, that there is an animal, which being cut into sixty-four similar parts, generates animals from thence, he would undoubtedly be laughed at; if he had added, that that same animal being turned inside out, like the finger of a glove, devoured it's prey, and after having eat, digested it as before, and generated it's likeness; this would have been looked upon by every body as an idle story. Yet we are now certain that all this is strictly true.

At the same time, it cannot be denied, that if the belly-worm be composed of cucurbitine worms, simply joined together, or grown into one animal, it ought in it's whole length to consist of homogeneous parts. But if there could be found any part of the belly-worm unlike the rest, and of a different structure, then this opinion falls to the ground; yet it has long since been adopted by many celebrated physicians^u, and has since been defended by *Valisner*, *Coulet*, and others.

Sometimes the broad worm comes out intire, as *Hippocrates* (see the passage already cited) has remarked, in the form of a bottom, which if unrolled, whether longer or shorter ends, the joints insensibly decreasing both in length and breadth, in an extremity very narrow, fortified, as it were, at the end with a little globe: that extremity of the broad worm

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^u Marcel. donat. de medic. histor mirab. cap. 26 pag. 255.

is called the thread by some, and if that does not come out, the skilful are afraid the broad worm might afterwards grow again, though it's length has come out by the anus. I have often seen that thread in entire broad worms, which have been driven out by diseases or the force of remedies.

The celebrated *Tyson* * gives us to understand, that many have looked upon this narrow part of the belly-worm as the tail of the broad worm; amongst these he reckons *Spigelius* and *Amatus Lusitanus*. But he himself believes it to be the head. For he found in the ileum of a dissected dog, a broad worm alive ^y, which did not lie lengthways, but rolled up and doubled in many parts; cutting the intestine with caution, he sought out the narrow extremity of the broad worm, which was stretched out towards the narrow extremity of the duodenum, whilst it's broad extremity being disengaged, and sticking to no part, tended downwards towards the *rectum*. But the narrow extremity of the belly-worm, was fixed in the internal tunic of the intestine, and stuck so closely that he could not separate it from thence without difficulty, gently raising it up with his nail: whilst he was doing this, the worm twisted itself, and fell from the finger, and soon after fixed itself to the intestine, so that it could not be separated from thence, except in the same manner, and with equal difficulty. He examined that extremity with a microscope, and gave two figures representing what he had seen: he found that it was not flat, but as it were, convex, thick set with hairs of the form of hooks, which he afterwards could see, even with the naked eye, when he examined it attentively. The same structure he observed in two other belly-worms.

Webster ^z has in like manner taken notice, that worms stick strongly to the intestines: for he found a
slimy

* Philosoph. transact. abridged, Tom. III. pag. 121.

^y Ibid. pag. 124.

^z Cicut. aquat. histor. & noxæ, cap. pag. 206.

slimy matter: *Cum aliquot lumbricis latis, cucurbitinis & teretibus; quarum plures adhuc vivebant, proboscides firmissime intestinorum tunicae infigentes, a qua etiam hirudinum instar pendebant, sublato intestino*: “ With
 “ some broad, cucurbitine and smooth worms, of
 “ which several were still alive, fixing their trunks
 “ strongly to the tunic of the intestines, from which,
 “ even when the intestine was taken out, they hung
 “ like horse-leeches.”

Tyson^a was of opinion that the part just described, which he took for the head of the broad worm, was chiefly of use in keeping the broad worm in a fixed place, and preventing it from easily coming out entire at the anus, so that several ells of the remainder of the body often come out separately. He doubts however, whether the belly-worm could, through a part as little as the head, receive such nourishment as might suffice for the support and increase of such a length of body: for this reason, he rather believes that those nipples, which are found in every joint of the belly-worm, as was said before, suck in the chyle, with which the whole length of the broad worm is found filled, and which occasions the white sediment at the bottom of the bottle when the broad worm is kept in spirits. But the celebrated *Bonnet*^b, to whom natural history owes such great improvements, both with regard to the animal and vegetable kingdoms, saw the head of the broad worm more distinctly, and gave a figure of it. In the same place are collected all the particulars now known concerning the broad worm, and at the same time, the different observations of eminent men are accurately discussed, and it is shewn by exact reasoning and sure experiments, what should be thought of each. It does not seem necessary to add any thing farther upon this subject at present.

But

^a Philosoph. transact. abridged, Tom. III. pag. 126, 127.

^b Memoires de mathem. & physiq. presentes a l'acad. des scienc. &c. Tom. I. pag. 478—530. & considerations sur les corps organisez, pag. 202, &c.

But as, when the origin of human worms was treated of, it seemed to be the most probable opinion (see sect. 1360) that they come from abroad into the human body, and that they are not absolutely inmates of, or congenial to it; it was reasonable to inquire whether the broad worm is to be found without the human body. The celebrated *Linnaeus*^c declares, that he in the presence of seven of his associates, found a broad worm in a sort of pulse. The admirable *Tissot*^d informs us, that a child of about four years of age, voided at one and the same time, a smooth worm and a belly-worm just forming, with a slight smarting of the anus: *Filum nimirum crassum, album, æquabile, viginti quinque circiter pollices longum, quatuor aut quinque circumvolutum gyris iisque omnino similem, quas in fontibus Sueciæ invenit illustris Linnaeus & in fonte Helvetico amicus medicus*: “A thick thread, “white, æquable, about five and twenty thumbs “breadths in length, rolled up in about four or five “circles, and exactly like those the illustrious *Linnaeus*, “found in the fountains of *Sweden*, and a physician, a “friend of mine, in a fountain of *Switzerland*.” *Raulin*^e saw a piece of a belly-worm taken out of the intestines of a lamb not three months old, which was twenty six feet long. The belly-worm is often found in oxen, in calves but seldom; many different sorts of it are often found in fishes^f. Now as these animals are food for men, a suspicion may arise that the belly-worm may in this manner get into the human body.

’Tis true indeed, that by boiling, roasting, and other methods of cookery, meat may be so changed, that the eggs of insects cannot easily continue entire if they come this way into the human body. But some observations seem to shew that the broad worm can bear a great degree of heat without being killed.

That

^c In systemate naturæ observat. in regn. animale.

^d De morbo nigro, scirris, &c. pag. 31. Van Doeveren dissert. de vermin. intestin. pag. 33.

^e Sur les maladies par les variat. de l’air, pag. 444.

^f Philosoph. transact. abridged, Tom. III. pag. 123.

That illustrious kings physician *Roseen* ‡, saw with his own eyes, seven witnesses being present, amongst a dish of boiled fish which was brought up to table, one that contained a belly-worm that was alive and moved. I have often seen such belly-worms in fishes when alive. But I have found them alive in the cavity of the abdomen without the intestines; I have kept them in water for four and twenty hours and longer, and I have plainly seen them move during all that time; the reader may consult *Andry* upon this subject^h; he observes that many have taken these for the roe of fishes, and have eat them. *Coulet* ⁱ has observed that ascarides, which according to him do not differ from the cucurbitine worms of other authors, immediately grow cold as soon as they come out of the rectum, and excite a very troublesome sensation of cold in the external skin where they stick: he perceived at the same time that they quickly die in a cold air. He declares that they can easily bear warm water; nay, *Duos ascarides in brodium carnis vitulini fervidum immittebat, illudque in eodem caloris gradu, mediante igni mediocri, in balneo mariæ per duodecim horas coninebat & tum illos æque vividos, agiles ac sanos inveniebat atque erant dum primo ex intestinis deciderent*: “He put two ascarides into a warm veal
 “broth, and by means of a moderate fire, he kept
 “that in the same degree of heat in balneo mariæ
 “during twelve hours, and then he found them as
 “lively, active and well, as they were when first they
 “came from the intestines.” It may be inferred from hence, that these worms can bear an intense heat without being destroyed, and hence the probability is greater, that they themselves, or their eggs are received into the bodies of men with their food.

But before I dismiss this subject of the broad worm, I thought it would not be amiss to relate a surprising observation,

‡ Des Schwedischen Academ. abhandl. 22 stück. pag. 161.

^h De la generat. de vers. pag. 53. & seq.

ⁱ De ascarid. & lumbrico lato, pag. 30, 31.

observation, which seems greatly to favour this opinion of Coulet. The celebrated Kœnig^k put a living cucurbitine worm upon the back of his hand whilst warm, having first thrown a drop or two of milk upon it, and he perceived that the worm crept transversely, and that the little swelling or nipple, which is in the side of it's body, which has been already spoken of when we treated of the broad worm, and which is scarce equal in magnitude to the *punctum lacrimale* in a man, began to swell, and the round lip being turned outwards, became ten times bigger than before: by the assistance of a convex glass, he saw a sort of proboscis rise out of this dilated cheek, a line and a quarter long, yellow at the extremity, and which was directed towards the drop of milk. But when he with a loud voice called to *Herren Schwandius* (a proper witness in cases of this nature) telling him that he saw what had never fallen under his observation before, he answered, that he enjoyed the same sight himself. The worm however suddenly drew back, that proboscis being struck by the coldness of the air, or the loudness of his voice. This observation shews, that those marks or little nipples, perform the office of a mouth; and as such things are observed in each joint of the broad worm, there is reason to imagine that they in it do the same office. But he afterwards adds^l, that he had communicated some experiments to the most learned and experienced *Ernstius*, who wrote the dissertation concerning the second belly-worm of *Platerus*, "*ex quibus constitit quod hi vermes cum se jungunt ita connectantur ut canales communes toti serici connexorum tunc disponantur eo modo uti si liquor aliquis coloratus, per osculum sæpe dictum injiciatur, per siphonem ei osculo aptum, is per omnem ambitum vermis, paralelogrammum referentis, in determinato canale satis amplo decurrat & eo loco utrumque, ubi isti vermes conjuncti sunt in vicinum ver-*

mem

^k Act. helvetic. volum. 1. pag. 28.

^l Act. helvetic. volum. 1. pag. 30, 31.

mem & simili ratione in propinquum transeat, ut tænia a marginibus egregie a colorato liquore pictis exurgat, qui liquor aliquando ex ore, in illa serie decimi vermis, rursus efflueret : “ From which it appears, that these worms
 “ when they join, are so connected, that the canals
 “ common to the whole series of connected worms,
 “ are then disposed in such a manner, as if some coloured liquor was injected into the mouth above-mentioned, by a tube fitted to the mouth, it
 “ would run through the whole circuit of the worm,
 “ representing a paralelogram, in a determined canal of a sufficient breadth, and would on each
 “ side, in the place where those worms are joined,
 “ pass to the neighbouring worm, and in the same
 “ manner to the next to that, so that the belly-worm
 “ would rise with it’s sides admirably painted by that
 “ coloured liquor, which would sometimes run out
 “ of the mouth of the tenth worm in that series.”

Thus these worms might certainly live alone, and when they are joined, they supply not only themselves, but others with food, and receive it from them in their turn. Wherefore it is not surprising that they are voided by the same man one by one, as well as linked together, being then changed into the broad worm.

Certain it is, that the surprising observations of Trembley, shew that the polypus, growing out of it’s mother as a branch from the trunk of a tree, is not only nourished by it’s mother, but nourishes her. It is the happiness of the age in which we live, that we know many truths which formerly would not have been looked upon as probabilities. Many more discoveries may be hoped from the industry of such great men, who will one day clear up the difficulties that remain.

Ascarides. Galen ^m has defined these, as being, *Tennes quidem lumbrici in parte præcipue inferiori crassi intestini procreati :* “ Small worms generated chiefly

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“ in

^m Comment. in aphor. 26. sect. 3. charter. Tom. IX. pag. 122.

“ in the lower part of the great intestines.” They are of a smooth figure, very little, and pointed at both ends; they sometimes cram the extremity of the intestinum rectum with a great multitude, and are voided with the excrements. They are very restless and lively; and they seem to derive their name from thence. For the word *ασναρίζειν*, signifies the same thing as *σναρίζειν* (see *Fæsius's* œconomy) namely, to dance, to leap, to palpitate, to move; for which reason, the continual motion of the mature foetus in the womb, is called by the same nameⁿ. Almost all those who have made mention of the ascarides take notice of their smallness: *Quoad figuram, colorem, magnitudinem, habent maximam convenientiam cum illis vermibus quos in caseo videmus admodum frequenter*. “ As to their figure, their colour and their magnitude, they have a great resemblance to those worms which we see frequently in cheese.” Whence many have been induced to think that they derive their origin from thence^o. It was before observed in sect. 1359, that a man was troubled with ascarides immediately after having eat a bit of white cheese. But the little meggots found in cheese, are thought to differ totally from the ascarides; because these undergo a metamorphosis; it does not however seem to be an inconsistency, that the meggots of cheese, which are full as lively as the ascarides when they are swallowed alive, should be carried to the anus, and occasion a troublesome itching as well as they, which as they in figure resemble the smooth worms that have been already treated of, but are much inferior to them in bulk, have been thought by some to be their foetuses. But, as far as I can see, nothing certain has been discovered concerning this matter. The worms which are called smooth, are generally of the thickness of a writing pen, as was observed before; they sometimes even exceed it; but in the bodies of

ⁿ Galen. comment. in aphorismum. 37. sect. 5. ibidem, pag. 217.

^o Van Doeveren de verm. intestin. pag. 10.

men and animals, very small worms of a similar figure have been found. *Vandel*, a celebrated physician^p, found in three dissected horses above sixty white meggots, very subtile and round. They crept freely over the whole cavity of the abdomen, and were found chiefly near the liver. These little worms were three or four thumbs breadths in length, and half a Parivan line in thickness. The remainder of the description seems to come pretty near that of smooth worms. He was afterwards informed by those that cut up horses, that such worms are to be found in a greater or less quantity in all horses without the intestines.

If the ascarides were the fœtuses of smooth worms, could they sometimes insinuate themselves between the tunics of the stomach and intestines, and there grow into a greater bulk: I propose this as a doubt, because some observations seem to countenance such an opinion. *Damianus Sinopeus*^q found in a corps, a flaccid, swelled, benumbed stomach: *Duobus lumbricis vivis inter tunicas ejus hærentibus, altero circa fundum, altero in parte superiori: quisque spithamam erat longus, ac uterque recta extensus juxta longitudinem ventriculi nisi quod in medio parum deorsum flexus ac rursus elevatus. Neuter autem vel forinsecus vel extrinsecus apparebat neque loculo suo moveri poterat, absque incisione parietum; quamvis superiorem, priusquam parietes incidi, leviter palpando susque deque adegerim, quo forte, illo moto observare possem foramen, per quod eo penetrasse credebam, ingruente morte; sed nec ita nec aliter lustrando superficiem, cum exteriorem tum maxime interiorem, ullum foramen animadverti. Intervallum tunicarum in quo quisque lumbricorum hærebat, seu loculus cujusque, pure semiplenus, laxè respondebat figuræ & magnitudini hospitis sui, nullo cuniculo ultra porrecto:*
 “ Two living worms sticking between it's tunics,
 “ one near the bottom, t'other in the upper part:

D d 2

^p Domin. Vandellii dissertat. tref. pag. 21.^q Parerg. medic. pag. 62.

“ each was a span long, and both were stretched
 “ straight out along the ventricle, excepting that in
 “ the middle they were bent a little downwards, and
 “ then raised again. But neither of them appeared
 “ either outwardly or inwardly, or could be moved
 “ out of it's place, without cutting the partitions ;
 “ though before I cut the partitions, I, by gently pat-
 “ ting, pushed the uppermost, that upon it's being
 “ put in motion, I might find out the hole by which
 “ it got in upon the approach of death ; but I did
 “ not by so doing, or by any other means, discover
 “ any hole, though I examined both the internal and
 “ external surface, chiefly the former. The inter-
 “ stice of the tunics, in which each worm stuck, that
 “ is, the receptacle of each being half full of pus, to-
 “ lerably suited the figure and size of it's inmate, no
 “ passage extending any farther.”

Hence that excellent physician inferred, that those worms had long lain hid between the tunics of the ventricle.

Storck † found smooth worms lurking between the
 tunics of the intestines in a woman of five and twenty
 years of age, who after having taken remedies for
 the worms, voided a great number upwards and
 downwards, yet the symptoms of worms lurking in
 the intestines did not cease, and she died of a con-
 sumption: *In cadavere intestina variis in partibus peni-*
tus arrosa, inflammata, corrupta & microscopio infinita
oblonga insecta visa sunt. Intra ipsam substantiam in-
testini jejuni (intra membranas nimirum) latuerunt tres
lumbrici quorum quilibet longitudine quatuor pollices su-
peravit : “ In the corps the intestines were gnawed,
 “ inflamed and corrupted in many parts, and many
 “ oblong insects were seen with the microscope. Be-
 “ tween the very substance of the jejunum, (that is,
 “ within the membranes) three worms lay hid, each
 “ of which was above four thumbs breadths in
 “ length.”

†Tis

'Tis plain that *Coulet* would have those worms, which other authors call cucurbitine, called ascarides. This will appear evidently, if *Coulet's* ^s figures be compared with the figures which we meet with in *Andry* ^t. But he would not allow the ascarides of the *Greeks*, which are said to be short and round, to be a different sort of worms; for he says: *Eos nonnisi ascaridum nostrorum partum juniorem pronunciare, minime dubito*: "I make no scruple to assert them to be no-
" thing else but the young offspring of our asca-
" rides ^u. But he does not seem any where to prove this assertion, that those lesser and round worms are changed as they grow, into those called cucurbitine by other authors.

What the antients have said concerning the ascarides is observed in the present age. *Hippocrates* ^x observed, that the ascarides are most troublesome in the evening; this I have taken notice of myself. The celebrated *Bianchi* ^y speaks of a friend of his, who for many years had been constantly from nine till ten at night, so troubled with the titulation of ascarides, that he could do no business at that time. At other times he was entirely free from this torment. For that, *Id constantissime per omnes tempestates anni omnesque status affecti*: "Constantly in every season
" of the year, and every state of his body." *Galen* ^z has given us to understand, that the ascarides are not to be driven out without violent remedies: *Bianchi* ^a acknowledges: *Verminosam hanc familiam a quocunque remedio indomabilem*: "That this breed of vermin is
" not to be exterminated by any remedy." *Hippocrates* had wrote in his fourth book upon diseases, that ascarides are generated in the breasts and privy parts

D d 3 of

^s De ascarid. & lumbrico lato post præfationem.

^t De la

generat. des vers. pag. 224.

Coulet, ibid. pag. 5.

^x Epidem. lib. 2 sect. 1. text 3. charter. Tom. IX. pag. 113.

^y Histor. Hepat. Tom I. part 2. cap. 7. pag. 166.

^z Method. medend. lib. 14. in fine charter. Tom. X pag. 343.

^a In the passage just cited.

of a woman; as *Hollerius* tells us^b; then he adds: *Et nos scimus, e meatibus urinariis cum urina exclusos*: “I myself know that they have been forced out of the urinary passages with the urine.”

After having laid before the reader the most remarkable particulars which are known concerning these three sorts of human worms, we come now to treat of the several disorders occasioned by them in the human body; by knowing which, we shall be able to discover the diagnostic symptoms, which shew that there are worms in the body.

S E C T. MCCCLXIV.

BY irritating, they cause qualms, vomiting, fluxes, fainting fits, a weak, faint, intermitting pulse, an itching of the nostrils, and fits of the falling sickness.

The reader has been already told what disorders are to be apprehended from worms seizing upon different parts of the body: they may interrupt all the functions of the parts in which they take up their residence. But at present we treat chiefly of those which worms give rise to, when they lodge in the ventricle and intestines.

[Qualms, vomitings.] It was proved in sect. 652, where we treated of qualms and vomiting, that the immediate cause of qualms and vomiting, is a convulsion of the muscular fibres of the jaws, the gullet, the stomach, the intestines, the diaphragma, and the muscles of the abdomen: whatever stimulates by irritating the above-mentioned fibres or the viscera which are easily convulsed, was assigned as the remote cause. If a feather moved in the jaws, if heavy glue partly fluctuating in the ventricle, partly sticking to it's sides, may occasion qualms and vomiting.

miting (see sect. 71) this will happen much more whilst worms creep through the ventricle and intestines, or pull them. Wherefore Hippocrates^c said: *Quæcunque autem dum jejunæ sunt, subbiliosa vomunt per multos dies, quum neque uterum gestent, neque febri-citent eas interrogare oportet, an lumbricos rotundos simul vomant; si enim hoc non confitentur, prædicendum est, ipsis futurum esse. Fit autem hic morbus maxime quidem mulieribus; deinde vero etiam virginibus; aliis autem hominibus minus:* “ Women, who whilst fasting, vomit matter somewhat bilious for several days, when they neither are with child, nor have a fever, should be asked whether they at the same time vomit round worms; for if they do not acknowledge this, they should be told that it will happen. For this disorder happens most to married women, next to them maids are most liable to be afflicted with it; men are but little subject to it.” For the smooth worms are very moveable, and creep on every side towards the places where they were used to find food: the broad worm is less moveable, and for this reason it often takes up it’s residence in the body for many years without doing much hurt.

For the same reason, it is easy to tell, why those who are troubled with worms, swell immediately after eating; it is because the whole swarm of worms creeps towards the upper parts. It appeared in sect. 646, where we treated of wind and belches, that they spring from the elastic matter, which is now kept under by the contraction of the stomach and intestines, now is exploded with noise and violence, the pressure which kept it down being removed.

But this elastic matter is quickly supplied by the air, which is swallowed down with meat and drink, and it’s quantity is increased, when by the digestion of food, the air is more disengaged and separated from it: the cause which excites the intestines to con-

D d 4 tractions,

tractions, is the motion and twitching of worms. Wherefore the sudden swelling of the belly after eating, is usually reckoned amongst the symptoms of worms lurking in the intestines.

Fluxes.] It was said before in sect. 719, and the following sections, whilst we treated of the feverish looseness, that besides the irritating stimulus, it was occasioned by the great force protruding into the intestines, whilst at the same time, in the intestines themselves, the contracting forces are weak, or in the absorbing vessels of the intestines, there are obstructions which prevent their receiving any thing.

But the worms by creeping and twitching, stimulate, and we see that the mouth of those who have qualms, is filled with something liquid: at the same time, worms disturb the natural peristaltic motion, which so greatly promotes the reflux of the fluid contained in the cavity of the intestines. Moreover the phlegm, the nest of worms, of which we shall speak in sect. 1369, may impede in the easy reflux of the humours, by obstructing the mouths of the veins open towards the intestines. Add to this, that if there is a great multitude of worms, many of them die; those that are dead, rot in the intestines, and hence arises a new cause of fluxes.

Fainting fits.] Whilst a worm sticking in the cavity of the pericardium, irritated the heart, it was no wonder that fainting fits were frequent; but it has already been fully proved, that the motion of the heart is disturbed, when the ventricle is disturbed; this has been shewn chiefly in sect. 700, and the following sections, where we treated of the feverish delirium. For this reason, the antient physicians called the upper orifice of the stomach *καρδία* because it has so great an influence over the action of the heart. *Galen*^d expatiates upon the stomach and cardia, and concludes with these words: *Nec mirandum si ejus dolores,*

^d De symptom. causis, lib. 1. cap. 7. charter. Tom. VII. pag. 60.

lores, tum animi deliquia, tum virium lapsus corritentur. Cum enim digiti offerensione videantur aliqui animi deliquio laborare, mirum profecto non est, affecto stomacho id accidere, quum et ob eximium sensum & ob situs vicinitatem, duo principia promptius in consensum adsciscere possit :

“ Nor should we be surpris'd if it's pains are accom-
 “ panied with fainting fits, as well as a failing of the
 “ strength. For as some seem ready to feel if their
 “ finger be but hurt, it is no wonder that this should
 “ happen when the stomach is affected ; since on ac-
 “ count both of their exquisite sensibility and their
 “ nearness, it can more quickly make the two parts
 “ correspond with it.” In another place^e treating
 of the same subject, he enumerates many symptoms
 consequent upon a disorder of the cardia, and then
 adds : *Atqui horum symptomatum vix ullum crederes a*
ventriculi ore procedere, quemadmodum nec syncopas quo-
que, nisi crebro ita evenire videretur : “ Scarce would
 “ you think that any of these symptoms proceed
 “ from the mouth of the stomach, as you would
 “ neither think swoonings to proceed from it, except
 “ it should seem often to happen so.” If we now take
 it into consideration, that the stomach and intestines
 are not only irritated and plucked by worms, but are
 sometimes pierced through and through, a mortal
 syncope may follow. *Sed et doloris vehementia vires*
prosternit ; nimirum si repente, vel morsus incidat, vel tor-
mina vel colicus affectus vel ileos : “ But the very vio-
 “ lence of the pain overpowers the strength ; especi-
 “ ally if anguish or gripes, the cholic or the iliaca
 “ passio, should suddenly come on f.

A weak, faint, intermitting pulse.] For such
 pulses generally precede fainting fits, and they shew
 that the vital force begins to fail : the reason was as-
 signed awhile ago.

An

^e De locis affect. lib. 5. cap. 6. charter. Tom. VII. pag. 492.

^f Galen. method. medend. ad glauc. lib. 1. cap. 15. charter.
 Tom. X. pag. 360.

An itching of the nostrils] The membrane which covers the inside of the nostrils, and which is called the pituitary membrane, seems to be continued through the pharynx, the œsophagus, and perhaps further : for all these places are moist, with a sort of slime secreted from the arteries, and a similar slime anoints and lubricates the surface of the stomach and intestines. The artificial filling of the vessels with wax, plainly shews that the apparatus varies in the nostrils, the œsophagus, the stomach and intestines ; nor is this to be wondered at, the functions of these parts being so very different. But there seems to be a continuation of the membrane in these parts, by which a soft slimy humour is secreted ; besides that, it answers other purposes. Therefore whilst worms creep in the stomach or intestines, it is no such wonder if the nostrils are slightly irritated, as through these, many nerves are distributed, and those sensible to such a degree, as to be effected by the smallest effluvia of odoriferous things, which escape the perception of every other sense. It is known almost to a proverb, that children troubled with worms, are perpetually rubbing their noses.

Fits of the falling sickness.] This was before taken notice of in sect. 1075, No. 4 ; and many observations confirm it, that worms have often caused fits of the falling sickness and shocking convulsions. But likewise the catalepsy, in which surprising disorder, in one moment, as it were, the whole common sensory becomes motionless, all power of the mind over the body is suspended, all parts remain in the very same state they were in at the very instant in which the person was attacked with the disorder ; that very disorder, I say, was occasioned by worms. The reader is referred to that surprising case, of which I myself was an eye-witness ; it is described in sect. 40. I saw a most terrible vertigo cured in an instant, the worms being thrown out by a vomit : the vertigo chiefly attacked the man when he was fasting in the morning ;

morning; it was somewhat diminished after breakfast. The broad worm is less moveable than the smooth worms; and yet *Hippocrates* § has spoken of it in the following terms: *Ubi homo jejunos fuerit, alias atque alias ad hepar fertur impetu & dolorem excitat. Interdum autem ubi ad hepar irrumpit, sputa ad os affluunt; interdum vero minime. Nonnullis quoque ubi ad hepar vehementer proruperit vocis defectionem inducit & ex ore sputa admodum multa fluunt quæ paulo post sistuntur, subindeque tormina multa in ventre excitantur. Quandoque etiam ad dorsum dolor incidit; illuc enim etiam decumbit*: “ Whilst a man is fasting, it is
 “ often hurried violently to the liver, and occasions
 “ pain. But sometimes when it forces it’s way to
 “ the liver, the mouth is filled with spittle, some-
 “ times it is quite the reverse. In some when it
 “ forces it’s way violently to the liver, it causes a
 “ suppression of the voice, and much spittle runs
 “ from the mouth, but this soon discontinues, and
 “ then violent gripes in the belly follow. Some-
 “ times the pain falls into the back, and even settles
 “ there.” The worms, especially the smooth ones, when food begins to fail them in the intestines, creep towards the duodenum which lies under the liver; and *Hippocrates* seems, for this reason, to have said, that in persons fasting, the worms are hurried to the liver. I saw in a young surgeon who kept his bed with a slight fever, which having past the crisis, manifestly began to decline, a privation of speech come suddenly, with an involuntary discharge of excrements. This I was the more surpris’d at, as in the whole course of the disease, there was no symptom of a disordered brain, nor could I see any reason to apprehend, that the morbid matter would be transferred to the head. Soon after, he vomited up a smooth worm alive, and immediately all those bad symptoms vanished, and the disease concluded it’s course happily, and in a short time.

A maid

§ De morbis lib. 4. cap. 15. charter. Tom. VII. pag. 614.

A maid servant of thirty-three years of age, who was subject to sudden and violent pains in the belly, chiefly about the stomach, was violently convulsed; nor could she utter a word, though her understanding and senses were unimpaired: there followed an universal contraction of the limbs, attended with a palpitation of the heart; her mind was not affected; dreadful pains in the stomach continued to torment her; and on the third day she died. As very bad and uncommon symptoms of her being poisoned appeared, the body was opened; and in the duodenum and the cardia, or left orifice of the stomach, there was found a great number of worms of a great magnitude, some of which were fifteen or sixteen thumbs breadths in length. The cardia was found bloody and gnawed ^h.

But sometimes a troublesome cough is caused by worms.] *Diemerbroeck* ⁱ informs us, that worms have sometimes been found in the lungs; and he declares, *Se vidisse vivum vermen, magnitudine & forma bombycem majusculum referentem sed subrubrum, cum valida tussi, a muliere quadam excussum*: “That he had seen “a living worm in form and magnitude resembling “a large silk worm, but of a reddish colour, thrown “out by a woman in a violent cough.” *Wepfer* ^k, in the *aspera arteria* of a stork: *Invenit plurimos vermes ascaridibus similes; sed crassiores & longiores circa asperæ arteriæ primam divaricationem; & in bronchiis vicinis in glomerem coacti erant*: “Found many “worms resembling ascarides; but they were “thicker and longer near the first severing off the “*aspera arteria*, and in the adjacent branches they “were rolled up into a bottom.” It is not to be wondered at, that a cough may be occasioned by worms taking up their residence in the lungs; but it seems probable that a cough may be occasioned by worms sticking in the stomach and intestines.

It

^h Heisters Wahrnehmungen, No. 372. pag. 614, 615.

ⁱ Anatom. lib. 2. cap. 13. pag. 306.

^k Cicut. aquat. histor & noxæ, cap. 19. pag. 236.

It was before remarked in sect. 1345, that a cough had been occasioned by the touching of the colon or second of the great guts, the extremity of which, when cut, jutted out of the belly of a wounded soldier. Certain it is, that *Aetius*¹ reckons amongst the symptoms of worms lurking in the belly: *Tussiculas tenuissimas, ac frequenter irritantes, quum tamen nihil rejiciatur*: “Slight coughs which frequently irritate
“whilst nothing is thrown up.” The learned *Friend*^m, though he was of opinion that a cough was not reckoned amongst the symptoms of worms by the antient physicians, declares notwithstanding, that many observations of the moderns and his own experience evince, that a cough is a very common symptom, especially in children who are troubled with worms.

It is obvious enough, that a variety of symptoms may prevail, according as worms irritate or gnaw these parts or those; not meerly from the injury done to the parts, but likewise because other remote parts may thereby be disturbed in their functions, as appears from what has been said.

In the *coacæ prænotiones*ⁿ, we meet with the following observation: *In lentericis cum animalculis (μετὰ θηρίων) dolores tormine soluti partes circa articulos tumefaciunt: ex talibus squamulæ rubicundæ, pustulosæ: exsudantes hi velut flagris cæsi rubescunt*: “In
“those that have a looseness with worms, (μετὰ θηρίων)
“exquisite pains with gripings, cause the parts near
“the joints to swell: from these come little red
“scales like blisters: these when they sweat are red,
“as if whipt with rods.” It is true indeed, that τὰ Θήρια sometimes in *Hippocrates*, signifies malignant and bad ulcers, and that a looseness often follows after a lasting bloody flux, in which the intestines have been ulcerated; but in many passages,
likewise

¹ Sermon. 9. cap. 39. pag. 171.^m Histor. of physf.

Tom. II. pag. 100.

ⁿ No. 467. charter. Tom. VIII. pag.

likewise τα ἑρπια signifies worms in the intestines, and this I take to be the meaning of it here, because I saw in a vintner troubled with worms, this whole series of symptoms, in the order in which they are here enumerated: what chiefly surpris'd me in this man, was to see after he had sweated, his whole body covered with red vails, as if he had been whipt with rods. But in two days these vails disappeared, and after a short time, his disorder was compleatly cured.

S E C T. MCCCLXV.

BY consuming the chyle, they occasion hunger, paleness, weakness, costiveness, and thence a swelled belly, belches and murmuring noises in the great intestines.

Worms, as appears from what has been said already, sometimes swarm in great multitudes in the intestines and stomach: the belly-worm has been sometimes observed to be of a prodigious length. These have occasion for food to support them, and make them grow; this they seem to find in the parts of the body where they dwell. Worms have been found in the kidneys, which had consumed their whole substance; in the liver, a worm took up its residence, which gnawed away that viscus^o; it was twenty thumbs breadths in length, and a thumb's breadth in thickness, red, full of blood, and like a gorged leech. The unhappy patient perceived the motion of a living animal; she complained of the most exquisite pains, and that she felt her insides gnawed; she had often told her physicians, and those that attended her, that a living animal tore her bowels. Certain it is, that such animals do not feed upon chyle.

But

But the worms of the intestines are washed all round with chyle; they are white; if they are put into water or spirits, they make it muddy by their white colour; they do not always pluck the intestines, insomuch that they often stay for many years in the body, especially the broad worm, without doing it much hurt. Whence it is evident, that they do not derive their nourishment from the very substance of the stomach and intestines; but from what is contained in the cavity of these viscera; and of this mild chyle seems the fittest food for these animals. *Van Doeveren*^p had a doubt, whether worms did not suck the blood as well as the chyle. He speaks of a belly-worm, which a friend of his saw voided: *Cujus osculis singulis guttula sanguinis effluebat*: "From each of whose mouths, there run a drop of blood." He thought this was confirmed by his seeing a worm voided^q, which was quite full of blood; this he thought to be a broad worm. But if the figure of this worm, represented in a copper plate, be examined, it will be found to differ totally from the broad worm; but it seems rather to resemble that which had eat away the liver, which I made mention of awhile ago.

If all that has been just said, be taken into consideration, it appears highly probable that the worms of the intestines are fed with chyle: nor do the arguments of eminent men^r, who maintain the contrary opinion, seem to be at all conclusive.

Perhaps an observation of *Coulet*^s may be urged in opposition to this. For he observed that the worms which he calls ascarides, as soon as they come out of the anus, voided a sort of substance extremely white, in the form of a fluid; which appears plainly, if the ascaris be put into water or any sort of liquor: *Tunc enim*

^p Dissertat. de verm. intestin. pag. 48.

^q Medic. essays & observat. vol. 2. No. 26. pag. 333, & seq.

^r Essais sur l'educat. medic. des enfans, Tom. II. pag. 37, &c.

^s De ascarid. & lumbr. lato, cap. 8. pag. 19, & seq.

enim visibiliter exit a partis anterioris extremitate media, eodem fere modo ac fumus e carmino, vel vapor tenuis ex angustiore parte infundibuli inversi, prodire consuevit, &c. “ For then it visibly comes from the midst of “ the extremity of the fore-part, almost in the same “ manner as smoke comes from a chimney, or as a “ subtile vapour comes from the narrow part of an “ inverted funnel, &c.” After some time, that white matter sinks to the bottom in the form of an exceeding subtile and white powder.

This white liquor, which appears like a drop of milk, is in a short time entirely dried up, and resembles chalk dissolved in gummed water and dried; it at the same time sticks tenaciously to the bodies which it meets with: but this liquor, whether it be still in it's state of fluidity or dried, communicates an exceeding salt taste to the tongue. Whence it seems to follow, that it is of a nature entirely different from that of mild chyle.

But it should be considered, that the chyle of the intestines, if it affords food for the worms, must undergo other changes in the body of the worm before it can nourish it, and then it acquires qualities very different from those it had before: hence that salt white humour so soon dried, which is voided by the *ascaris*, is not chyle, but a liquor formed from the chyle in the body of the worm.

If therefore, as it appears very probable, worms are fed upon chyle, the body is deprived of part of it's nourishment, whilst worms consume it; hence there is a perpetual call for food, and those who are troubled with worms, have voracious appetites. Thus *Alexander Trallianus* ^t observed an insatiable hunger, called by the physicians *Bulimus*, in a man who had a worm in his stomach. Sometimes qualms succeed to a voracious appetite, the worms being put in motion after the food has been eaten, as I have sometimes observed in persons troubled with worms.

Paleness,

Paleness, weakness.] As blood should be made out of good chyle, by the action of the vessels and viscera, from which the other more subtle humours should be separated, it is evident that the red blood must be diminished by the diminution of the chyle; whence arises paleness, which weakness will always accompany when it proceeds from such a cause.

Costiveness, &c.] It was observed in a former paragraph, that worms by irritating sometimes cause fluxes. But when the disease gains ground, and the quantity of worms is increased, the worms then consume every thing fluid contained in the intestines, what is thick remains, and because the peristaltic motion is disturbed, it is not easily forced towards the anus; hence the intestines being filled, are dilated; their contracting force is diminished, and therefore the belly swells more and more, as daily observation shews in children troubled with worms.

Belches and murmuring noises in the bowels.] See what has been said concerning these in sect. 648. for the cause which produces convulsive motions in the intestines has place, that is the irritating caused by worms, and the great acrimony of the retained matter; but at the same time, there is a great quantity of elastic matter generated by the putrefaction of the matter retained, and therefore there is an adequate cause of belches, wind and murmuring noises in the bowels, in persons troubled with worms.

S E C T. MCCCLXVI.

THEY often perforate the intestines themselves.

There have been famous physicians who made it a doubt whether worms could ever perforate the intestines, For authors of natural history had not then described such organs in human worms, by which

they could perforate and eat into the intestines. It cannot be denied that worms have been found in the cavity of the abdomen, and that the intestines have been perforated at the same time. However they chose rather to believe, that that solution of continuity found in the intestinal tube after death, was the effect of a gangrene, which whilst it dissolves into putrid corruption, or is separated from the adjacent sound parts by suppuration, must of consequence make a passage for the worms to come into the cavity of the abdomen^u. It scarce admits of a doubt that this sometimes happens. But a great number of observations that may be depended upon, prove that worms can make a passage for themselves by perforating the intestines.

That melancholy case which I related in sect. 1364, of a young woman, who after having suffered violent pains, was seized with a tetanus and died, proves this to a demonstration. For a great number of smooth worms were found in her stomach, and the cardia was bloody and gnawed.

The grievous pains which are so frequently observed in persons troubled with worms, likewise favour this opinion; and therefore they are reckoned by *Hippocrates* amongst the diagnostic symptoms which shew that there are worms in the human body: *Oris ventriculi dolores cum tormine, ventris animalcula* (Ἰνρία) *erumpere faciunt*: “Pains in the mouth of
“ the ventricle with gripes, cause the worms of the
“ belly to force their way out.” *Heister* opened the corps of a boy of seven years of age, who had for some time suffered grievous pains in the belly; and who, though he had a very good appetite, died; his plumpness being insensibly diminished. In the abdomen he found a few ounces of yellow water, which being absorbed by a sponge, several smooth worms discovered themselves to his view; and though the corps was opened the day after his death, he found

but

^u Brouzet, sur l'educat. medic. des enfans, Tom. II. pag. 38.

but one amongst them alive. The small guts were full of holes, and contained many more worms, but they were all dead. He made no mention of a gangrene; but he found in a certain place of the small guts, a red, hard tumour, which had some open holes, through which he imagined the worms of the intestines had crept into the cavity of the abdomen^x. This very observation is to be met with elsewhere in the *Latin* language^y.

Various remedies were given, and to very little purpose, to a woman who had been troubled during five days, with gripes, vomiting, and costiveness: the frequent use of emollient clysters, procured her an evacuation by stool, which somewhat eased her gripes; but the vomiting continued. On the eighth day she vomited up a smooth worm, which in length equalled a thumb's breadth. Thence she felt some ease about the stomach; but the gripes continued, though not so violent as before.

She gave her physicians to understand that she had had a tumour like a small hen's egg in her right groin for eighteen months, which had never given her any pain, but yielded to the pressure of the hand. That skilful surgeon *Dowglass*^z, suspected it to be an hernious tumour, and treated it according to the rules of art for three days, which was some relief to the patient. On the fourth day the pain was much increased in the tumour, with a sort of shooting; she then first suffered the surgeon to inspect the place affected, which she had before obstinately hid from him. He found a large inflammatory tumour tending to suppuration, and without any swelling of the inguinal glands; having applied a suppurative poultice for two days, the tumour was opened on the fourteenth day after the disease began, by a common caustick; there flowed from it about four ounces of

E e 2

ferous

^x Heisters Wahrnehm. No. 515. pag. 869.

^y Aët. phys. med. volum. 1. observ. 172. pag. 391.

^z Medic. essays & observat. Tom. I. No. 19. pag. 223.

ferous pus, which was gradually changed into a pus of a better sort : but on the twenty-third day, there came a smooth worm out of the ulcer ; and at the same time it was recollected, that in two days after the opening of the ulcer, such another worm had come from it : about the fortieth day, the ulcer was closed up : however, a month after, there appeared a little opening in the scar, through which the thin part of the excrements came out. But she easily bore with this slight ailment.

The celebrated *Benevoli*^a, treated a similar disease with that above-mentioned ; and he having weighed all circumstances, was of opinion that the intestine was perforated by worms : *Uti cadaverum incisio docuerat, sæpius contigisse* : “ As the dissection of bodies has often shewn to be the case ^b” From the urinary passage of a boy of seven years of age, there often came worms of the intestines, which his father used to extract whilst they stuck near the nut. Once whilst he attempted to do this, the worm broke, and the remainder sticking in the urinary passage, prevented the evacuation of urine ; but the worm consuming in a little time, as that celebrated physician had foretold it would, the urine afterwards had a free passage. The boy being dead, two stones were found in his bladder. But the neck of the bladder was obliquely pierced ; this hole answered to a similar hole in the intestinum rectum : thus a passage was opened, by which worms could pass from the intestine into the urinary passage. However (not to suppress any circumstance) it remains doubtful whether worms make themselves a passage by gnawing. For *Alghisi*, so eminent amongst the surgeons of his time for the operation of cutting for the stone, believed that the intestinum rectum, and the neck of the bladder, might perhaps, after the small-pox, be eaten away by an abscess seizing upon those parts ; but it is

not

Differtat. et observazion. No. 17. pag. 145, & seq.

^b Ibid. pag. 149.

not said in the history of that disease, that such an abscess had ever been known in those places^c.

Tulpius^d observed, that a living worm burst from an ulcer in a woman's groin; and though the surgeon was apprehensive that an incurable ulcer in the intestines would be the consequence, she was cured soon after.

The admirable *Jacquin*, whilst he resided in *America*, in order to collect those specimens of natural curiosities, which contribute to fill and adorn the cabinet of our most august emperor, informed me by letter that the inhabitants of those countries often died, their ventricle being eat away by worms. Few will be inclined to call in question the sincerity and diligence of such a man: his excellent treatise upon botany, which was published this year, is a shining proof of them.

I believe what has been said is sufficient to prove that the intestines being perforated by worms, may be justly apprehended.

S E C T. MCCCLXVII.

WHEREFORE they often prove mortal.

It is true indeed, that *Hippocrates*^e treating of the broad worm, says what follows: *Qui hunc vermem habet, ei toto quidem tempore nihil valde metuendum accidit; quum vero debilis extiterit, ægre reficitur. Vermis enim eorum quæ ventriculum ingrediuntur partem aliquam assumit. Si igitur, ut convenit, curatus fuerit, convalescit; si vero non curetur, sua sponte non exit; mortem tamen non infert; sed una consenescit*: “ Nothing very dangerous happens to him that has this worm, “ during the whole time that he is troubled with it;

E e 3

“ but

^c Dissertat. e osservazion. 8. pag. 109, & seq.

^d Lib. 3. observat. 12. pag. 199.

^e De morb. lib. 4. cap. 15. charter. Tom. VII. pag 614.

“ but when he is weak, he is with difficulty restored
 “ to his strength. For the worm takes some part of
 “ whatever enters the stomach. If therefore he be
 “ treated in a proper manner, he recovers ; if he is
 “ not cured, the worm does not come out of it’s
 “ own accord ; yet it does not occasion the patient’s
 “ death, but grows old with him.” It cannot be
 denied that the broad worm sometimes takes up it’s
 residence in the body for many years without any
 great danger, but not always without giving some
 pain. But the particulars already related concerning
 worms, sufficiently prove that death is often to be as-
 cribed to them ; whether it be a slow death, as when
 unhappy children for want of nourishment die of a
 consuming fever ; or a sudden death, when they are
 taken of by violent convulsions. Many observations
 have been laid before the reader, which evince this
 truth.

S E C T. MCCCLXVIII.

THEY are known from the age, the food,
 the constitution, their effects, (1364,
 1365, 1366.)

Before we treat of the method of curing worms, it
 may not be improper to consider those symptoms
 which shew that there are worms in the body, lest re-
 medies for the worms should be given, whilst the
 symptoms observed take their rise from other causes.
 If the worms are voided either upwards or down-
 wards, we may well believe that more lie hid in the
 body, if the same symptoms continue or gain ground ;
 and then it is easy to form a judgment of the disease.
 But when no worms have been voided, and there is
 notwithstanding a suspicion of worms, then all parti-
 culars should be carefully attended to, in order to
 come to a right knowledge of the disease.

From

From the age.] Young persons are most troubled with worms; and for that reason worms are reckoned amongst the disorders of children: it appeared however, from what has been already said, that people are not always free from worms in the other stages of life. Both young persons, and grown persons of a voracious appetite, are often found to be troubled with worms.

The food.] *Jacquin*, of whom honourable mention was made awhile ago, observed, that many are troubled with worms who eat a great deal of fruit not quite ripe, and who feed much upon fish and salt flesh; whilst others who live upon a better sort of diet, are more free from them. An honest monk of the Franciscan order, who had lived many years at the emperor of *Morocco's* court, informed me, that he knew many there who loved to eat raw flesh, and were very much troubled with worms, and in great danger, if this pernicious race was not driven out of the body by taking a strong purgative every month. The children of the poor, who for want of good food, eat whatever offers, are much oftener troubled with worms and swelled bellies than others, as appears from daily observations.

Constitution.] If they be relaxed and phlegmatic; in these, all the corporeal functions are slowly performed. See what has been said upon this subject in sect. 1360, 1361.

Their effects.] Which have been enumerated in the paragraphs here cited.

But worms have sometimes been observed to attend epidemic diseases.] Thus at the first siege of *Buda*, the epidemic disease that prevailed, was accompanied by worms^f. This has been often observed in the diseases of the army, as also after great inundations. Many observations which confirm this, have been collected^g. In the spring of the year

E c 4

1763,

^f Marfigl. histor. danub. Tom. VI. pag. 114.

^g Van Doeveren, dissert. de verm. intestin. pag. 27.

1763, whilst I was in the country, I had more poor people's children to cure of worms than in other years. It had been preceded by a long and severe winter. In autumn, people are more apt to be troubled with worms than at any other time of the year. *Hippocrates*^h said : *Autumo maxime lumbrici & cardialgia* : “ In autumn, worms and swoonings are “ most rife.” This is likewise confirmed by *Raulin*ⁱ, who observed a man troubled with a belly worm, who during five and twenty years, was every autumn tormented with cholic pangs, though during the remainder of the year he could do his customary business, and had a very good appetite. During fourteen years he had no symptom besides the cholic pangs, returning periodically every autumn, excepting that towards the end of that term, cucurbitine worms came out at his anus : these are looked upon, and not without reason, as symptoms of a belly-worm lurking in the body.

Some other symptoms of worms lurking in the body, are to be met with in authors. Thus *Jacotius*^k gives us the following information : *In pueris autem cum ex aliis signis tum familiari illo, deprehenduntur, quod per somnum concipientes lumbricorum in ventre morsum, mastitent musculis masticatoriis imaginata, ut volunt, experimentibus* : “ They are discovered in children, as well by other symptoms, as “ by that common one ; namely, that imagining in “ their sleep that they feel themselves bit by worms “ in the belly, they make a motion with the muscles of their jaws, expressive of what passes in their “ imagination.”

Others to the above-mentioned symptoms have added a particular sort of smell which cannot be described.

^h Epidem. lib. 2. text. 3. charter. Tom. IX. pag. 119, & lib. 6. epidem. text. 14. ibid. pag. 376.
ⁱ Des malad occas. par les variat. de l'air, pag. 424, &c.
^k Holler. in coac. Hippoc. pag. 594.

scribed by words, sobbing, terrors during sleep, a nose white like wax¹, sudden changes of the complexion. The celebrated *Alexander Monro*^m, has added another symptom; *Diu observavi*, says he, *in illis hominibus pupillam esse dilatatam qui vermibus in ventriculo vel intestinis laborant; et si non pro signo pathognomico saltem pro syndrome sive symptomatum concursu & optima diagnosi, haberi potest*: “ I have often
 “ observed, says he, that the eye-ball is dilated in
 “ those who are troubled with worms in the ventri-
 “ cle or intestines, and if it cannot be looked upon
 “ as a peculiar and essential symptom of the disease, it
 “ may be considered as a concurring symptom which
 “ admirably indicates it.” But he explains this phænomenon by the union of the eighth pair of nerves with the intercostal nerve. For it is well known that the intercostal nerve being cut in a living dog, it's eyes grow dim, lose their lustre, shed tears, become hollow, the circumference of the eye is diminished, and the pupil contracted. From whence he concluded that the intercostal nerve serves to dilate the pupil, and that it's action is increased by the irritating of the nerves of the stomach and intestines.

It is well known, that in a true and perfect gutta serena, the pupil is excessively dilated, and the eyes appear bright, and as it were, sparkling. *Jaquin* whilst he resided in *America*, wrote me word, that the inhabitants are frequently troubled with worms; and he observed, that they were attended by the following symptoms: *Somnolentia, tormina ventris, oculi clari, sed flavescentes, palpebra inferior flavescent, vel cærulescent, convulsiones subito lethales*: “ Drowsiness,
 “ gripes in the belly, eyes bright, but yellowish.
 “ The lower part of the eye-lid yellowish or blueish,
 “ convulsions which cause sudden death.” Thus the opinion of the celebrated *Monro* is admirably confirmed.

It

^m Nervor. anat. contract. pag. 39, in notis.

¹ Brouzet. educat. medecin. des enfans, Tom II. pag. 57.

It will be no disadvantage to collect as many symptoms as possible, the better to come to the knowledge of the disease. For sometimes there occur many symptoms of worms, though there are none in the body. *St Clair*, a celebrated professor at *Edinburgh*^a, relates the following extraordinary case. A child four years old, was troubled with pains in the stomach; it was subject to an itching of the nostrils, watchings, terrors in it's sleep, after which it started up and remained awake; it moreover perpetually rubbed it's nose, whether asleep or awake; convulsions followed afterwards, of which it died on the sixth day, many remedies having been tried according to the rules of art, but to no purpose. The intestines being with care dissected in their whole extent, and the stomach opened, no worms appeared; but there were found about two ounces of a viscid substance like a jelly, near the beginning of the jejunum.

It has sometimes been observed, that after the worms were voided, some symptoms have remained, which might be imputed to them. Thus it often happens that a falling sickness occasioned by worms, continues after the worms are gone, if the fits have been frequent and violent. That epileptic disposition continues in the common sensory so often, and so violently disturbed; this is often suspended for a while; but it may be roused and rendered powerful again, not by worms only, but by other antecedent internal causes: see what has been said upon this subject in the chapter concerning the falling sickness. For since, as will be shewn hereafter, there is occasion for strong purgatives in the cure, it would be by no means safe to exhaust the body any longer with them, if there were no worms remaining, but only some slight symptoms.

S E C T.

^a Medic. essays & observ. vol. 2. artic. 18. pag. 294, & seq.

S E C T. MCCCLXIX.

THE cure is effected, 1. By destroying the receptacle of worms (1361) by fixed alcalics, gums that drive away phlegm, preparations of mercury, antinomiatic medicines, and bitter aromatics.

We have already spoken of phlegm as the receptacle of worms, in sect. 1361; there is a sort of slimy humour which anoints and lubricates the internal surface of the intestines; this may sometimes be increased, and afford a commodious place of residence to worms. But there seems to be separated from the very body of the worm, a quantity of viscid humour, with which it is covered on every side, and strong food kept from acting upon it. The slime which wraps up the worm being increased in quantity, goes off, and a new slime is secreted for the same uses. This is the reason why those who are troubled with worms, are frequently thought to void slimy excrements.

The cure of this glue, collected in the first ways, was treated of in sect. 75, where we spoke of the method of curing diseases occasioned by a spontaneous glue. Biliary bitters, saponaceous dissolving remedies, the stimulating aromatics of gum, which at the same time purge gently; dissolving salts, strengthening aromatics, gentle mercurial preparations, are chiefly recommended. Prescriptions are to be found in the *Materia Medica* at this article, which may answer this end, and according to which, many more remedies of the like nature may be prescribed.

It is easy to conceive, that in the application of these, the age and strength of the patient should be attended to, and that the dose should be increased or diminished, as occasion requires.

S E C T.

S E C T. MCCCLXX.

LIKEWISE by externally anointing the abdomen with balsamic medicines composed of the strongest aromatics, with a mixture of such as are purgative and oily.

Most of the remedies just recommended, are bitter; others of them have a nauseous taste, so that it is often very difficult to administer these, especially to children, in such a quantity as can produce any effect. Hence physicians have been obliged to have recourse to external remedies.

Two ointments are sold in most shops, with which, when the abdomen's anointed and warmed, they act with a penetrating force upon the intestines, and often so as to occasion a violent purging. The *Unguentum Agrippæ*, "*Agrippa's ointment*," contains very strong purgative ingredients, such as *Radicem bryoniae*, *elaterium sive cucumerem asininum*, *scillæ bulbum*, *iridis radicem*: "The root of bryony, the juice of wild cucumbers, sea onions, the root of iris." The other is, *Unguentum Arthanitæ*, otherwise called *Cyclament*: "Ointment of fowbread," which besides the roots of fowbread and wild cucumbers, contains the bitter pith of *Coloquintida*, *fel taurinum*, *baccas mezerai*, *scammoneum*, *euphorbium*, *aloes*, &c. "Oxe's gall, berries of Mezeræum, scammony, euphorbium, aloes, &c." An equal quantity of both these ointments is mixed in the *Materia Medica*, to anoint that part of the belly where the navel is. Most of the remedies, of which these ointments are composed, purge violently; wherefore they cannot be administered internally, even to strong and robust men, without great caution: but from the external use of the more gentle remedies, no cure can be hoped. It is a matter of dispute whether the stimulating

ating force of these medicines, penetrating the skin, acts immediately upon the intestines under it, or whether, being sucked back by the absorbing veins of the skin, and circulating through the vessels with the other humours of the body, it occasions a purging. Certain it is, that the parts about the navel in young children, being rubbed with such ointments, a dangerous over-purging may follow, which may give occasion to a severe bloody flux. Wherefore but little is rubbed on at a time, and when they begin to complain of gripes, prudence directs not to anoint the navel with them any longer, till it appears what effect they produce. But if a copious evacuation should follow, the navel and the skin next it should be immediately washed with *Venice* soap, lest any leavings of the ointment should continue in the skin, which might increase such disorders.

In the *Materia Medica* at this article, another prescription occurs which contains no purging ingredients, but whose efficacy is chiefly owing to that fragrant aromatic tanfie.

S E C T. MCCCLXXI.

BY killing the worms: which is effected by means of medicines sweetened with honey, saline medicines, things not to be digested by worms, bitter aromatics, preparations of mercury, acids, preparations of vitriol, which partake either of the nature of iron or copper.

The worms of the intestines, whilst alive, seem to be able to stick in such a manner to the sides of the intestines, as not to be driven out of the body by that motion, by which the victuals are insensibly produced to the anus. But the smooth worms more easily and more frequently come out at the anus; especially if they be dead; sometimes too whilst alive, they

they grow tired of their habitation, and creep out at the anus; sometimes too, when they enter the ventricle, they are thrown out alive by vomiting; as it is certainly known from the frequent observations of physicians. But smooth worms are moveable enough, and it is very probable that they often change their place; nay, at the time of a disease, as was said before, no remedies for the worms being given, when neither the physician nor the patient suspects there are any, they come out of their own accord. Perhaps the humours, collected in the intestines, being changed by the disease, become hurtful to the worms, and force them to change their place. If at that time, when a man is even against his will, forced to make a great effort to force out his excrements, some worms do not stick to the sides of the intestine, they will be hurried away with the excrements. But the belly-worm, as was said before, is fixed to the intestine by its small extremity, and sticks firmly; for this reason, it is with the greater difficulty forced out, and it scarce ever comes out intire of its own accord; frequently a considerable part of it broke off, sometimes several ells in length is forced out, as appears from a considerable number of observations. As the ascarides and cucurbitine worms are very moveable, they often come out at the anus.

But if the death of the worms in the intestines could be brought about, they can then be easily forced out with the rest of the excrements, as they could resist the peristaltic motion of the intestines only when alive. And though the worms, when dead, might still stick to the intestines, they would soon consume away in a moist, warm place, and so that connection would be dissolved.

This was admirably remarked by *Aetius*^p, when treating of the cure of worms, he says: *Viventes equidem vicinas partes apprehendunt; mortui vero una cum stercore evacuantur. Prodeunt autem quidam ad*
hu

huc vivi, sed vertigine affecti & si ita dicere libeat, seminecati: “ When living, they catch at the parts
 “ which are next them; but when dead, they are
 “ evacuated with the excrements. But some of
 “ them come out still alive, but disordered; and if
 “ I may be allowed the expression, half dead.”

But though the indication of the disease, directs to kill the worms, the greatest care should be taken not to give any thing capable of hurting the stomach or intestines. Many remedies are here enumerated, each of which deserves to be particularly considered.

By means of medicines sweetened with honey.] It is universally acknowledged, that there is a dissolving force in honey; it may therefore be of use to dissolve the phlegm, and make it thin. But it is not quite clear whether the honey itself is hurtful to worms. It is true indeed, that *Aetius*^a recommended mead for persons troubled with worms, and directed: *In sorbitiones vero mellis plurimum conjiciendum:* “ That a
 “ great quantity of honey should be thrown into what
 “ they drink.” It is worthy of remark, however, that the antient physicians thought gall destructive to worms, even when rubbed externally upon the navel. At the same time, they maintained that honey is converted into gall in the human body; especially if the patient be of a hot constitution. Thus in *Galen*^r, we meet with what follows concerning honey: *Siquidem illis qui jam in flore ætatis sunt, potissimum si calidiore natura sint ac vitam degant laboriosam, in iis totum mel vertitur in flavam bilem:* “ Since with those who are
 “ in the flower of their age, especially if they be of a
 “ hot constitution, and lead a laborious life; honey
 “ is always converted into yellow gall.” In another passage he confirms this^s.

Perhaps honey was recommended as a remedy for the worms for this reason. However it may be of service

^a Ibidem.

^r De natur. facultat. lib. 2. cap. 8. charter.

Tom. V. pag. 45.

^s De aliment. facultat. lib. 3. cap. 39.

charter. Tom. VI. pag. 399.

service in lubricating and purging. More modern physicians have since been of opinion, that honey drank in great quantities is destructive to worms, because it can obstruct what is called the pipes in insects, by which they breathe, and which have been described by *Malpighi* in the silk worm. But those pipes have not been yet shewn in human worms, and perhaps they do not breathe, as they are to live in the human intestines, whose cavity is filled by it's contents ; especially as the intestines in their natural state are contracted, as was said upon another occasion in the chapter concerning belches and wind.

For the same reason, the use of oil was recommended if given in a large quantity, so as not merely to anoint, but fill the intestines. Thus *Aetius* ordered a glass of the oil of unripe grapes to be given to the patient, and a great quantity of oil of unripe grapes to be boiled in his ptisan, and he would have *Præbitiones vero ex oleo semper augendas*: “ His allowance of oil constantly increased.” The reason he gave for it, was : *In universum enim omnia, quæ lumbricos educunt aut per acredinem occidendo, aut per amaritiam subducendo aut ad excretionem irritando aut per consequentiam ad ea, quæ exhibentur, lubricitatem, efficacia cognoscuntur. Extrahuntur autem simul, ut verisimile est, per sorbitiones vas lubricas reddentes aut etiam per innominatam aliquam qualitatem*: “ In general, all remedies that remove worms, either by
 “ killing them by their sharpness, bringing them out
 “ by their bitterness, irritating them to evacuation,
 “ or by the lubricity occasioned by the remedies taken, are known by their efficacy. But they are
 “ at the same time, as seem probable, forced out by
 “ beveridges, which lubricate the passages, or by a
 “ quality without a name.” Thus *Vegetius* ^u, with other remedies, mixed a considerable quantity of oil, and he either poured it into the bodies of animals with

^r Sermon. 9. cap. 39. pag. 173. ^u Art. veterin. lib. 1. cap. 44. 45. script. rei rustic. Tom. II. pag. 1065, 1066.

with a horn, or caused it to be injected with a clyster, saying: *Quæ virtus medicamentorum & lenitas olei, animalia ipsa intus occidit & foras ejicit*: "Such is the virtue of medicines, and the softness of oil, that it kills the worms in the body, and throws them out."

But the experiments which have been made, have shewn various effects. The celebrated *Lanzoni*, threw into common oil, a human worm that had been voided alive, which immediately died. He put into honey, a worm that had been thrown up in vomiting, which quickly died*. Those were smooth worms. But *Coulet* could not keep cucurbitine worms longer alive in any liquor than in oil of almonds, in which they lived for four and twenty hours†. I do not know that these experiments were ever tried upon a broad worm, if it came alive and entire out of the body, as it generally died soon after being voided. Many experiments may be seen in the works of the celebrated *Torti*‡, from which it appears that round worms have lived very well for several hours in common oil and mead.

I have sometimes made use of a great quantity of honey as well as oil, but I could not by that means kill the broad worm, as these often occasion qualms and vomiting; I have sometimes seen smooth worms thrown out by vomiting; and a great quantity of honey being given, worms sometimes came out at the same time if a looseness followed, as is frequently the case. However, the effect of these was not so certain that one could depend upon them. Whilst the ascarides occasioned a troublesome itching about the anus, I took care to inject frequently with oil and mead; but these expedients disappointed my hopes.

Saline medicines] It scarce admits of a doubt, that salts, especially the sharper sort, and even the

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gentler

* *Acta phys. med. nat. curios. vol. 1. observ. 94. pag. 173.*

† *De ascarid. & lumbrico lato, pag. 31 & 33.*

‡ *Therapeut. special. ad febres, &c. lib. 5. cap. 6. pag. 510. & seq.*

gentler sort if taken in great quantities, may be troublesome to worms; but these cannot be given otherwise than in so moderate a quantity, as not to hurt the intestines; and for that reason, there will be the less ground for hopes that the worms can be much affected by them. But when the salts have at the same time a purging quality, then there is more hopes of their proving beneficial. Wherefore physicians have chiefly recommended *Sedly* and *Ebsham* salts, and others of a similar nature.

In order to drive out ascarides, which take up their residence in the intestinum rectum, or a woman's privy parts, *Hippocrates* ^a directed that the parts should be washed with brine.

Things not to be digested by worms.] As worms seem to be chiefly nourished by chyle, it scarcely seems possible to find such things as being eat by worms, can do them a prejudice.

Whilst we consider the chief remedies for worms recommended by authors, they seem to be properly enough divided into three classes. Those of the first class are rough and rugged: and it is hoped from these, that being moved and pressed by the peristaltic motion of the intestines, they would destroy the tender bodies of the worms, or greatly hurt them, so that the dead, or at least the debilitated worms, may be more easily driven out of the human body. The second class contains such things as diffuse a disagreeable and penetrating stench through the whole tract of the first ways, being applied in such a manner that it's action may be continued, and not interrupted. Finally, the third class contains those things, which though they can neither hurt the worms by the roughness of their parts, or by a bad smell, yet have been found by experience to prove very destructive to them.

Tha

^a De mulier. morb. lib. 2. cap. 60. charter. Tom. VII. pag. 832.

That remedy seems to belong to the first class, which the celebrated *Mead*^b declares, he by using it found to be of great efficacy: *Stanni rasi & coralli rubri*: “Of tin shavings and red coral,” equal portions were ground into an exceeding subtile powder, a dram of which, made into a bolus, he gave twice a day with a conserve of the tops of sea-wormwood. The celebrated *Aston*^c gave pure tin in a much greater quantity to persons troubled with worms; the very day after purging, he in the morning, when the ventricle was empty, gave an ounce of pure tin pulverized and sifted with a sieve made of horse-hair, and having very narrow intestines: he mixed the powder of tin with four ounces of black syrup of the poorest sort, which in the making of sugar, remains like a sediment, and hence is called the dregs of sugar. On the day following he gave half an ounce of pulverized tin mixed with two ounces of the same syrup, and he repeated the same dose on the third day, and the next day a purge was given, prepared of an infusion of the leaves of senna and manna, such as had been given the day before the powder of tin was given: he declares that he has seen this remedy produce the most happy effects, as it immediately eases the pain in the stomach occasioned by the worms; though the worms do not go out till some days after. This quantity of tin is given to grown men; in young persons, the quantity is diminished according to their age.

But though tin reduced to powder may many ways be destructive to worms, this celebrated physician was of opinion, that it chiefly acts by the powder's getting between the tunics of the stomach and intestines, and the worms; and thus preventing them from easily sticking to the stomach and intestines, inasmuch that a purge being given, they are easily forced out.

F f 2

Perhaps

^b Monit. & præcept. medic. sect. 3. pag. 119.

^c Medic. essays & observat. vol. 5. part 1. pag. 89. & seq.

Perhaps the filings of iron act in the same manner, if a dram's weight of them be given every morning during several days ^d. But tho' iron is easily enough dissolved, both in our humours and in the liquors we drink, it is highly probable that it acts not only by a mechanical force, but by a medicinal metallic virtue; of which subject we shall soon treat farther.

That product of the sea which perhaps with many others should be considered as belonging to the animal kingdom, and is sold by the name of coral in shops, seems to have acquired a distinguished reputation amongst remedies for the worms on the same account, namely, because of it's mechanical roughness. Certain it is, that *Conrad Gesner* ^e prescribed pounded but not sifted coral, to kill the worms. It is obvious enough that other rough powders that are innocent, may be tried for the same purpose.

The second class contains those remedies that destroy worms by their bad smell.

Garlick holds a distinguished place amongst these, as it diffuses on every side a smell pretty strong, penetrating, and not disagreeable to those that are not accustomed to it. It is easily borne by the human body, and it is well known that many are extremely fond of it, whilst others detest it's smell. *Horace* was one of these who would have garlick worse than hemlock, given in punishment of parricide; but when he saw the common people eat it without being hurt by it, he made the following exclamation; *O dura mefforum ilia!* "O the strong bowels of reapers!" It has been always loved by men who led a life of hard labour. A thousand six hundred talents were laid out in garlick, onions, and radishes, for the workmen who were employed in building the pyramids ^f. But so penetrating is garlick, that in men who eat it every day, the whole skin, even to the fingers-ends, smells of it: nay, when a poultice made

^d Van doeveren der verm. intestin. pag. 71.
Medic. pag. 91.

^f Herodot. lib. 2. pag. 137.

^e Epistol.

creasing motion in the fibres of the intestines, it so prevents the sticking of worms to their sides, that they may be the more easily driven out by purgative remedies. The action of the garlick will be more powerful in those that have not always been used to it; for it has less effect upon such as have been accustomed to it. If the sick persons once every day swallow a clove of garlick either entire, if it be a small one, or cut into parts, then the smell of the garlick always continues in the stomach and intestines. The cloves of garlick boiled in vinegar furnish a tolerably agreeable sauce for the table; but then the force of the garlick is more dead. If ascarides should take up their lodging in a woman's privy parts, *Hippocrates*¹ recommended the thrusting of oblong medicines, composed of things good against the worms, up the part; but he at the same time added, *Et allii coctis & crudis vescatur, & ascarides exeunt ac moriuntur*: "Let her feed upon boiled and raw garlick, "and the ascarides come out and die."

In such cases *asa fœtida* is recommended, which is of a much worse smell than garlick, especially if it is brought from Asia fresh, and of a white colour, such as I sometimes have happened to see; for then it diffuses a smell almost insupportable: wherefore bags full of new asa newly gathered are hung up to the top of the mast; for if they were opened in the vessel, nobody could bear the stink which is gradually diminished by drying. Yet in Asia asafœtida is reckoned a great dainty, whilst it is mixed with sauces, or dishes are just rubbed with it. With regard to this subject, the reader is referred to *Soempfer* "upon "exotic niceties, *In amœnitatibus exoticis*." Whence *Hoffman*^m used to drive out the brood of worms with his worm specifick, that is to say, pills made of asa fœtida, myrrh, saffron, and sweet mercury.

To

¹ De mulier. morb. lib. 2. cap. 60, Charter Tom. VII. pag. 832. ^m Medic. ration. system. Tom. III. sect. 1. cap. 5. sect. 32. pag. 110.

To this class belongs the valerian root which *Fabius Columna*ⁿ would have to be the true *phu* of *Dioscoris*, and found it to have great efficacy in curing the falling sickness, both in himself and others, if half a dram of the root ground to powder was taken every morning. The celebrated *Marchant*^o made trial of this root to cure the falling sickness, and with good success; but he perceived at the same time that worms were driven out of the body, and that the patients sweated copiously. This root diffuses a very bad smell; and as it acts chiefly by causing sweats, and seldom purges, it seems to be fatal to worms. The king's physician *Storck*, celebrated for the invention of many new medicines, in order to drive out worms, joined the valerian root to purgatives and aromatics with great success^p.

For the same or a similar reason, the caput mortuum, which remains after all the volatile parts have by fire been forced out of harts horn, is praised as an excellent remedy for worms. For the coal remains solid, capable of being crumbled, foetid, bitter, and still defiled by a thick, tenacious, pitchy oil^q.

Perhaps sulphur likewise belongs to this class; for, *Si crudum humano ingeritur corpori, partita sed repetita crebro, dosi primas vias mire repurgat tandem satis valide, tumque morbos quosdam cutaneos, verminosos, metallicos minerales efficaciter sanat*: "If it be received
" crude into the human body, the dose being divid-
" ed into portions, and often repeated, it strangely
" purges the fixed ways; at length it clears them
" very powerfully, and then it efficaciously cures
" certain cutaneous diseases, where worms are in the
" case, and which are of a metallic and mineral na-
" ture." I have often given sulphur in this manner; and though it has scarce any smell of itself, ex-

F f 4

cep:

ⁿ In *phytobasano*, pag. 113—121. & in *ecphrasi plantar.* pag. 210.

^o *Academ. des scienc*, l'an. 1706 mem. p. 420, &c.

^p *Ann. medic.* secund. pag. 228.

^q *H. Boerh. Cham. Tom.*

2. process. 120. p. 359.

cept it is made warm either by friction or by fire, whilst it is dissolved in the first ways, either by the force of our humours, or by the food swallowed, excrements of a very bad smell are voided by stool; does this unusual stink hurt the worms?

It does not seem at all improbable that many other discoveries will be made either by chance, or by attentive observation and experiments properly made. The great use of these will excite physicians to investigate these matters more thoroughly.

Next follows the third class, which contains those remedies which have been observed to be destructive to worms, though they are neither endued with roughness of parts or a bad smell.

Galen^r wrote concerning the peach-tree, that, *In germinibus & foliis vincentem habet amaram qualitatem, & ideo folia ejus trita & super umbilicum imposita, vermes necant*: “ In it’s buds and leaves it has a bitter
“ binding quality, and therefore it’s leaves pounded
“ and put upon the navel, kill worms.” It appears from the observations of the celebrated Boulduc^s, that an infusion of flowers and soft leaves have the gentle purgative quality of the peach-tree; and he praises that as the best remedy for worms in children. It will presently be shewn what should be thought of bitters; and it will appear in the following paragraph that gentle purgatives are scarce ever sufficient; so that this remedy acts upon the worms by a peculiar virtue.

Galen^t has observed of fern, that, *Radicem habet maxime utilem: latum enim lumbricum interficit si quis eam quatuor drachmis in melicrato ebibat*: “ It has a
“ very useful root: for it kills the broad worm if a
“ person drinks four drams of it in mead.” The celebrated Marchant^u confirms the opinion of Galen:
for

^r De simplic. ur. facult. lib. 7. No. 17. Charter Tom. XIII. p. 209. ^s Academ. scienc. l’an. 1414. hist. pag. 49.

^t De simplic. facult. lib. 8, No. 39. Charter Tom. XIII. p. 223.

^u L’academ. de scienc. l’an. 1701. Mem. pag. 285.

For he declares that it is certain from an infinite number of experiments that fern root is a wonderful and sure remedy, that drives all sorts worms out of the human body. It seems probable that the remedy prepared of fern (fern-water) which *Andry* kept as a secret between him and his son-in-law *Dionis* has fern-root for it's foundation ; nor does he deny this, but he pretends that a particular sort of preparation of fern-root is required *. After the death of *Andry*, his son-in-law *Dionis* † endeavours to persuade the publick, that but little fern enters into the composition of this remedy, and that there are many other ingredients in it. But every body knows that the dealers in nostrums are not always to be believed. It becomes a gentleman to prefer the good of the human species to gain : but the curst love of lucre often persuades the contrary. I never repented freely communicating to every body any useful secret I might be possessed of, and I am sure I shall not repent it at the time,

*Dum numina nobis
Mors instans majora facit.*

Perhaps many other things may have a similar effect. *Barrere* x declares, that scordium ground to powder has often been of use in curing disorders occasioned by worms. There is a considerable catalogue of remedies for the worms, to which recourse may be had y.

Bitters, aromatics.] Such remedies are often beneficial in strengthening the viscera, where the first digestion is made, and they correct a leucophlegmatic cachexy, which is favourable to worms (1362).

But

* *Andry* sur la generation de vers, p. 531. † De tænia, pag. 46. x *Observat. anatom. &c.* pag. 170. y *Andry* sur la generat. des vers. pag. 609, & seq. Le Clerc *Hist. Lumbric. lat.* pag. 408, & seq.

But it is not quite certain that bitterness is so fatal to worms.

Galen ^z indeed has written, that worms may be killed by bitters; and afterwards he added, *At teretes quidem absinthium perimere potest. Lati vehementia remedia desiderant; cujusmodi est filix; pari modo et quæ ascaris dicitur:* “ Even wormwood can destroy the smooth worms. The broad worms require stronger remedies; fern is one of these; so does that which is called the ascaris.” But it appeared from the observations already laid before the reader, that worms have been frequently found in the duodenum, into which there runs bitter gall by the common channel. It appears from the experiments of the celebrated *Redi*, that earth-worms as well as human worms live a long time in bitter decoctions; but that they soon die in water sweetened with honey or sugar. Worms have been found not only in the liver where the gall is formed, but even in the gall or bladder of a sheep, which contained most bitter gall, worms swam at their ease ^a.

Coulet ^b acknowledges, *Quod nullum invenerit liquidum adeo amarum quod amaritie sua vermes extinguere posset. Imo ex opposito eos semper & vivaciores et vegetiores in talibus liquidis inveniebat:* “ That he never found any liquid bitter enough to destroy worms by bitterness. Nay, on the contrary, he always found them more active, and better able to live in such fluids.” He adds, however, that worms cannot live longer in bitter liquids than in pure water. Smooth worms taken out of the intestines of a calf just killed, and being immersed in ox’s gall, have lived for about nine hours. These worms have lived in good case so long in the most bitter infusions of *aloes* and *coloquintida*, as likewise in

^z Meth. medend. lib. 14. cap. ultim. Charter Tom. X. pag. 343.

^a Le Clerc. Histor. Lumbr. lat. pag. 94.

^b Tractat. de ascarid. & lumbric. lat. pag. 32, 33.

in infusions of bark, that the celebrated *Torti*^c, tired of this delay, took the worms out of these liquids, and threw them into spirit of wine; in which they were immediately killed. But they could easily bear even the juice of garlick diluted with water. What has been said seems to be sufficient to prove that worms are not so easily killed by bitter aromatics as many have imagined.

Preparations of mercury.] As quick-silver, corrected by things of a fat nature, has been found of great service in destroying worms in the skin, it has been thought, that it might likewise be of use in destroying worms in the intestines. Some following the advice of *Brasavolus*, have given a few grains of unprepared mercury to children; and this is said to have been attended with good success^d. However, it may be reasonably doubted whether so little quick-silver can kill worms: for it would be by no means safe to repeat such doses at that tender age. Nay, it does not seem to be altogether certain that quick-silver is so fatal to worms. That excellent physician and great proficient in natural history, *Scopoli*^e, observed that worms in the intestines are no where found more frequent, or in greater numbers, than near mines of quick-silver: *Nulla ætas reperitur & nullus est sexus, qui iisdem non laboret*: “No age nor sex is to be found free from them.” Yet those people live in an air defiled by quicksilver, rendered volatile by fire, and are often injured by such exhalations; besides, quick-silver swallowed even in a considerable quantity, frequently comes out by stool.

Others have been of opinion, that if water bubbles up with quick-silver, or is so much as chymically digested with it, it acquires great force against worms; and that therefore if such water be drank, it will quickly

^c Therapeut. spec. Febr. lib. 5. cap. 6. pag. 510, 511.

^d Herman. Kau diss. de argent. vivo, pag. 14.

^e De Hydrargyro Idriensi, pag. 155.

quickly destroy them: *Pauca tali et innoxio potu omnes vermes interimi tam in intestinis quam alibi, in ulceribus etiam, si aqua ista affundatur*: “ By a little
 “ of such innocent drink, all worms are killed, as
 “ well in the intestines as elsewhere: even in ulcers,
 “ if that water be poured upon them.” This *Helmontius* asserts ^f. Hence many have imagined that something comes from quick-silver in water; which opinion was adopted by the celebrated *Hoffman* ^g; he expresses himself in the following terms: *Quin etiam sola aqua communis, propter subtilissimum illud universale in poris ejus residens, sal, tandem, coctione diutius instituta, ex argento vivo partes abradit; unde hoc decoctum ad luis veneriæ virus, item ad progeniem virminosam expellendam, in praxi non ignotum est*:
 “ Even common water alone, on account of that
 “ exceeding subtile salt which resides in all it’s pores,
 “ at length rubs parts off, after having been a long
 “ time boiled with quick-silver; wherefore it is not
 “ unusual with practitioners to prescribe this decoction in the venereal disease, and to drive out
 “ worms.” Nay, *Dionis* ^h declares, that he has seen patients, who had long drank mercurial water, seized with a sudden trembling of all their limbs; as often happens to those have indiscreetly made use of unprepared mercury, or who have been long exposed to mercurial exhalations, as is often observed in gilders. *Heister* ⁱ has remarked, that pigeons troubled with worms have been cured by drinking water, in which there was a mixture of quick-silver.

Experiments have been tried ^k in order to discover whether quick-silver communicated any thing to pure water, in infusion, chemical digestion, or fermentations; and it was concluded that the quick-silver

^f In fine capituli sextuplex digestio alimenti humani, pag. 180.

^g Medic. ration. & system. Tom. II. cap. 6. pag. 261, 262.

^h Dissertat. sur le tania, pag. 45, & seq. ⁱ Wahrnehm. No. 200. pag. 351, 352.

^k Institut. Bonon. Tom. II. part 1. pag. 118. part 2. pag. 117.

silver lost nothing : for as the waters which are usually drank are seldom entirely without salt, and we now know that mercury is not only dissolved in acids, but is affected by alkaline and neutral salts, it is no wonder if something is communicated to such water by mercury ; but at the same time mercury does not seem to be any way affected by pure water. *Helmont*¹ likewise believes this, who affirms that water acquires a power of destroying worms, if quick-silver be steeped in it ; especially if it begins to bubble : *Hæc aqua namque, licet ne minimum quid de argento vivo in se sorbeat aut ad sui naturam convertere queat, attamen ab argento vivo proprietatem, non item substantiam mutuatur, sic ut pota aqua ejusmodi necet lumbricos universos & ascarides, existentes etiam, quo potus iste nunquam pervenit ; quippe qui mox totus in lotium rapitur, &c.* Sic unica uncia argenti vivi millies poterit inficere mensuram aquæ, attamen permanere in pondere & proprietate pristinis, &c. *Fit nempe id absque ulla argenti vivi passione, diminutione, mutatione debilitate atque alteritate :* “ For this sort of water, tho’ “ it does not suck in the smallest particle of the “ quick-silver, or convert it to it’s own nature, it “ however borrows the property, though not the “ substance of quick-silver ; so that such water being drank, kills all worms and ascarides, even “ those which reside where that drink never penetrated ; for it is soon totally converted into “ urine. Thus a single ounce of quick-silver is capable of tincturing a measure of water a thousand “ times over, and yet retain it’s former weight and “ properties, &c. For this is effected without the “ quick-silver’s any way suffering, without either it’s “ diminution, mutation, weakning or alteration.” He afterwards enlarges more fully upon this.

We

¹ In the chapter upon the great virtue of words, herbs and stones, pag. 459.

We must own that there are remedies, which without any sensible loss of weight, communicate to the liquids into which they are poured, such a medicinal force as discomposes the whole body in a surprising manner: *Vitrum antimonii* & *regulus antimonii*, when infused in wine, are neither changed, nor do they suffer any sensible loss of weight; nor are the flavour, colour, or smell of the wine changed, and yet if two ounces of such antinomial wines are given to a man in the most perfect state of health, they unhinge his whole frame, and cause him to evacuate both upwards and downwards.

Whence it appears, that surprising virtues may be communicated to liquids, when they are infused or boiled down with things of a metallic nature. It can be determined only by careful and reiterated experiments what we may hope from this remedy. *Torti^m vi illata submersit lumbricum hydrargyro; qui aliquo etiam nonnunquam mercurii granulo onustus, emergebat, huic post modum aqua simplex superaddebatur, ipsius præexistentis mercurii agitatione, quantum licet, roborata, qua lumbricis ab externi acris immediato contactu & injuria tutus evadebat:* “*Torti* by force plunged a worm in quick-silver, which emerged, being sometimes loaded with a little grain of quick-silver; to this, after a time, plain water was added, strengthened as much as possible by the stirring of the mercury which was there before, by which the worm was secured from the immediate contact of the air, and from injury.” But as the worm lived nine hours and more, *Torti*, tired of the delay, plunged it in spirits of wine and killed it.

But it will appear in the following paragraph, that preparations of mercury are of great use in driving worms out of the human body.

Acids.] It is very certain that strong and corroding acids hurt worms; but these cannot be endured by the stomach and intestines, except they are first diluted

^m Therapeut. special feb. lib. 5. cap. 6. pag. 510, 511.

diluted with a great quantity of water ; but then they will be less able to hurt the worms. It was observed that vinegar has made human worms alert and lively, whilst it quickly destroys earth-worms ⁿ. But this liveliness and alacrity is known by the lively motion of the worms at the time that vinegar is poured upon them, and therefore it might with some probability be concluded, that human worms are not refreshed, but put to pain by vinegar, which their restless motion testifies. *Torti* ^o has likewise observed concerning earth-worms, that they immediately die if they are thrown into vinegar ^p. But a smooth worm taken out of a calf remained during six hours in vinegar before it died. Vinegar therefore seems to be dangerous to worms, and perhaps it may produce this good effect, by the restless motion the worms may be kept from sticking to the intestines, and so may be forced out the more easily. In *Amatus* ^q a worm powder is described, to which he ascribes great efficacy: *Corallinae sem. santonicae, ana partes duas: dictamni albi, bistorta, tormentillae ana partem unam*: “ Of
“ coral and wormwood feed two parts in equal por-
“ tions : of white dictamnium, snake-weed, and tor-
“ mentil one part, in equal portions.” These ingredients reduced to powder were moistened with sharp vinegar ; then they were dried under a shade. The dose was from a dram to three drams, according to the different degrees of strength and of the disease. It is well known in chymistry, that after drying the moist acid part of the vinegar remains. *Boerhaave* ^r took saffron and myrrh ; on these he poured twenty times the quantity of vinegar from the strongest wine in a high chemical vial ; he boiled it during twelve hours ; by percolation after boiling he separated the vinegar, rich with the strength of the ingredi-

ⁿ Van Doeveren de verm. intest. p 68.
 special. Feb. lib. 5. cap. 6. pag. 512.

^o Therapeut.
^p Ibid. pag. 510.

^q Curat. medicin. cent. 3. curat. 97. pag. 354.
 Tom. 2. process. 81. pag. 277.

^r Chem.

ingredients from the subsiding dregs; upon the remainder he poured one half of the former quantity, he boiled it as before; by distilling over a gentle fire those two tinctures mixed together, he thickened it till it equalled the remainder of the third part, and thus the acid of the vinegar remained sufficiently concentrated and impregnated with the strength of the ingredients. He praises this remedy^f, *Quoties in primis viis putredo, bilis fœtida, concreta pituita, lumbrici & infiniti, de quatuor his causis orti morbi prædominantur*: “As often as in the *primæ viæ* putrefaction, “rank gall, gathered phlegm, worms, and an infinity of diseases, sprung from these causes, prevail.”

This remedy is taken in the quantity of from one to three drams, in mead or small sweet wine in the morning, when the ventricle is empty, at least twelve hours after the last meal. I have often known this prove highly beneficial.

Vitriol remedies partaking of the nature of steel.] It was observed in this paragraph, that the filings of iron are beneficial to persons troubled with worms, as by the roughness of their parts they must prove hurtful to those insects. But it is well known that iron is very easily dissolved in our humours, and that the dust of it is very good for sick women; nay more than that sort of dust of iron which is prepared by art and labour^g. If the filings of iron be dissolved in oil of vitriol diluted with water, what is called in the shops *vitriolum Martis*, *Mars's vitriol*, is prepared therefrom; of which, if a dram be dissolved in a pound of pure water, and it be drank when the ventricle is empty; *Aperit, laxat, purgat, urinam movet, lumbricos necat, pellitque, fæces alvi aterrimas tingit aut instar terræ agillatæ format, fibras roborat, hacque ratione multos eosque diversissimos, morbos sanat*: “It “opens, relaxes, purges, promotes urine, kills the “worms and drives them out, it stains the excre-
ments

^g Ibid. pag. 278.

^f Ibid. pag. 440.

" ments with a black hue, forms them into a sort of
 " clay, strengthens the fibres, and in this manner
 " cures many disorders, and those of the most diffe-
 " rent kinds ^u." This quantity is given to grown
 persons, a smaller quantity is given to young per-
 sons; in some it occasions qualms, but these are ea-
 sily borne, and the malignant flavour of the *vitrio-*
lum Martis may be easily sweetened by a certain syrup
 fold in the shops; but as it stains the excrements
 with a black hue, if this remedy be taken for three
 or four days successively, the whole tract of the in-
 testines is tinged with the flavour of vitriol, and so
 are all the liquids that are swallowed, or that being
 separated from the viscera, are carried into the intes-
 tines. It very surely and expeditiously kills the
 worms in the stomach, and then they are generally
 driven out soon after by vomiting. It has some-
 times been observed, that when filings of iron have
 been given, the worms have come out stained with
 a colour like that of iron. Iron dissolved in a vege-
 table acid ^w furnishes a remedy more mild, but effica-
 cious notwithstanding.

Or of copper.] In all remedies which are com-
 pounded of copper, much greater caution is requir-
 ed; the *vitriolum Martis* prepared with a most power-
 ful acid, namely, the oil of vitriol, is administered
 with safety, and a considerable quantity of it can be
 borne by the human body, as was said awhile ago :
 but copper dissolved in a vegetable acid, which is
 much milder, cannot be given internally without the
 greatest caution imaginable, and is always attended
 with danger. It is well known what mischief has
 been caused by boiling meat in rusty pots. I have
 known very good and pure wine, when kept in a
 silver cup, covered at top, produce very bad con-
 sequences when drank; but this was not occasion-
 ed by the silver, but by the copper, of which there

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is

^u Chem. Tom. II. process. 81. p. 439.

Ibidem. pag. 44 v.

is always a certain quantity in utensils made of silver. For the internal surface of that silver cup was found covered over with rust, when the cause of this mischief was enquired into.

At the same time, copper dissolved in acids furnishes a sure poison for insects: *Solutio cupri in aqua forti si diluatur aqua quam plurima pediculos, pulices, pediculos planos pubis prompte enecat*: “A solution of copper in aqua fortis, if it be diluted with much water, quickly kills lice, fleas, and the smooth lice about the privy parts *.” I have known insects which have taken up their residence in the hollows of the forehead, and which occasioned grievous headaches, killed and driven out, whilst a grain of that sort of vitriol, which partakes of the nature of copper, being dissolved in half an ounce of water, was sucked in at the nostrils.

Copper dissolved in volatile, alkaline salts, and even in neutral salts, acts more gently. Wherefore that blueish tincture, which is prepared of the full brine of ammoniac, salt, and the filings of copper, has been recommended as a remedy against the falling-sickness in children. It is well known that fits of the falling-sickness are frequently occasioned by worms: *Guttula paucula in hydromelle datæ jejunis, levi motu, alvi subductione, nausea inducitur, mire mutant pigros tenellos stomachos; hos excitant, aquas, pituitas educunt, vermes occidunt*: “A few little drops given to them in mead when fasting, by a gentle motion, promoting stool, occasioning qualms, in a surprising manner change sluggish, tender stomachs; these they excite, water and phlegm they bring out, and they kill worms †.” The same celebrated author ‡ has observed that some distilled waters are endued with a power of destroying worms, because they contain dissolved copper; for whilst he gives accurate description of the method of prepar-

ing

* Ibid. process. 190. p. 477.

† Ibid. pag. 476.

‡ Ibid. process. 15. pag. 71.

ing distilled waters from fragrant plants, he observes that there at first comes out a water which appears white, thick, odorous, well tasted, frothy and troubled, which should be kept for medicinal uses. If the distilling be continued, there follows another water, which is pellucid, subtile, without the true smell of a plant, without the natural taste of a plant, but almost acid. If the hollow surface of a brass still be imperfectly tinned, then the last-mentioned water eats through the copper; it sometimes turns green, and being nauseous, vomitive, and in-venomed, comes from those who make use of it, especially weak persons and children, both upwards and downwards, with violent gripes, and disordering of the belly. Then this water acquires a power of destroying worms; but it derives it only from the dissolved copper, which the experiments of *Torti*^a shew to be very destructive to worms; he observed that smooth worms taken out of a calf when thrown into an infusion of green brass, soon made very observable motions and contortions: not near so much in other fluids: however, they lived pretty long in that infusion of rust. But the worms were so agitated when they were immersed in this infusion, *Ut non semel ad explorandum, an vermis aliquis, de quo adhuc ambigebatur, num esset extinctus, vere viveret (quod in insectis hisce, haud ita facile semper noscitur) tanquam ad lydium lapidem factus fuerit recursus ad infusionem viridis æris*: “That more than once recourse was had to
 “ the infusion of green brass, as a touch-stone to discover whether a worm, concerning which there was
 “ some doubt whether it was living or dead (which
 “ is not always easily distinguishable in these insects)
 “ was really alive:” for if the worm was not quite dead, it immediately made some motion.

Van Doeveren^b saw surprising effects arise from *Spiritu juniperi vulgaris*, “The spirit of common juni-

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“ per;”

^a Therapeut. spec. feb. lib. 5. cap. 6. pag 510, 511.

^b Dissertat. de verm. intestin. pag. 69.

“per;” which so often tempts the common people of *Holland* to excess: and he for this reason doubts whether it does not act by some virtue peculiar to itself. A fermented spirit prepared from corn is distilled with juniper-berries, whose fragrance, added to the spirit of corn, furnishes that spirit which is called spirit of *juniper*. But the quality which destroys worms does not seem to arise from the *juniper*. The experiments of *Torti*^c have shewn, that the smooth worms found in calves are immediately killed in spirit of wine: scarce were the earth-worms touched by the spirit of wine, but they died that instant. Wherefore the spirit of corn seems to hurt the worms more and sooner than the aromatic quality of juniper. Whence *Torti*^d drew the following inferences: *Cum primo in vini spiritu, mox in aceto et tertio loco in vino, interire lumbrici utriusque speciei observati, videtur conjici posse, quod vino, aliisque liquoribus ex vino prodeuntibus, præcipue vero, parti illius spirituosiori, insit aliquid hujusmodi insectis inimicum quod illos habetet, inebriet ac tandem occidat, quemadmodum gallinas grano vini spiritu imbuto nutritas, fere ut mortuas ad tempus in terram concidere vulgo satis est notum:* “When worms of both sorts
 “were observed to die first in spirit of wine, then
 “in vinegar, and lastly in wine itself, it seems reasonable to conjecture that there is in wine, and
 “other liquors composed of wine, especially in their
 “spirituous part, something that is pernicious to
 “insects of this nature, that stupefies, inebriates,
 “and at last kills them; just as hens (as is known
 “even to the vulgar) that have fed upon corn tintured with spirit of wine, sometimes fall down upon the ground as if they were almost dead.” *Van Doeveren* was of opinion, that the spirit of juniper acts upon the phlegm, the receptacle of the worms; but it seems rather to hurt the worms themselves. This seems likewise to be confirmed by a physical observation, which we met with in *Baglivi*^e, upon the almost

^c See the passage just cited.^d Ibid, pag 512.^e Oper. omn. pag. 699.

most epidemical nature of malignant and putrid fevers, which were so rife in the last year of last century at *Todi*. All the diseased voided smooth worms in great quantities: *Hi vermes vivi, positi in vinum, statim peribant: in oleo, aqua saccharata, spiritu vino, aceto, succo limonum, per plures horas vivebant & plures dies. Ægroti qui vinum bibebant, omnes sanabantur pene*: “ These living
 “ worms being thrown into wine, died instantane-
 “ ously: in oil, water sweetened with sugar, spirit of
 “ wine, and the juice of lemons, they lived many
 “ hours and many days. Such persons affected with
 “ this disease as drank wine, were almost all cured.”

In the worm fever common in camps, I have known wine, and above all the serum of milk, which tastes like wine, prove highly beneficial when drank in large quantities. If such worms stick in the stomach, they are immediately affected by these liquors.

But we find in the observations of *Torti*, who examined the smooth round worms, that they were soonest dispatched in *spirit of wine*, next in vinegar, and slowest of all in wine: it therefore seems surprising, that smooth human worms have been quickly destroyed in wine, and have been able to live hours, nay whole days, in vinegar and spirit of wine. Was he guilty of any negligence in trying his experiments? Or is the diversity of nature in the smooth worms of calves and human worms the cause of this?

But as neither wine in considerable quantities, nor the spirit of wine, can be borne by young children, it is evident that nothing can be expected from these remedies, except in grown persons.

It appeared from the observations of *Coulet*^f, that human worms can bear a very intense heat; but that they are immediately killed by ice or extreme cold water, which is not yet frozen. Many are fond of ice; and the stomach of such as are used to it seems to be able bear it: but it is always dangerous to fill

^f *De ascarid. & lumbr. lato*, pag. 3—11.

the stomach all at once with very cold water, which might indeed hurt the worms that stick in the stomach; but the water will certainly lose that degree of coldness before it can come to the intestines, and for that reason will not be able to hurt the worms of the intestines. Some have advised to inject with a clyster of cold water; but neither could this penetrate to the small guts, for the little valve of the colon prevents it. Perhaps the ascarides which stick about the extremity of the intestinum rectum, and sometimes occasion an insupportable itching, might be killed by applying ice to the anus: but those active worms, as soon as they feel a troublesome degree of heat, can easily find a safer place.

But many prescriptions are to be met with in the *Materia Medica* at this article, which are usually made use of to kill worms chiefly in children; according to which receipts many similar remedies may be prepared. Perhaps either by accident, or the industry of physicians, other remedies against the worms of still greater efficacy, may be discovered, which may have a power of killing worms, without hurting the stomach or intestines: for the remedies hitherto discovered have not yet shewn such an efficacy as can be thoroughly depended upon for killing worms. The celebrated *Homberg* § saw a lad who was healthy in all other respects, who during four or five years voided every day a great quantity of worms, which were five or six thumbs breadth in length; he once or twice voided a piece of a belly-worm an ell and a half in length; so that it seems probable, that the other worms which he voided were of the nature of those called cucurbitine. He abstained totally from fallads and fruit, and he had recourse to all the remedies against worms then known, but to no purpose.

I am inclined to think, that every practitioner in physic has often lamented his ill success in killing worms.

§ Academ. des scienc. l'an. 1707. Hist. pag. 11.

worms. Worms have often been driven out alive or dead by purgatives, whether simple, or mixed with such things as are thought to be hurtful to worms; of this method of cure we are now to speak.

S E C T. MCCCLXXII.

BY driving out the worms both living and killed, by means of bitter purging remedies, such remedies as drive away the phlegm, and mercurial remedies.

Purging remedies have always held the most distinguished place among remedies against worms, as it is not a matter of great importance, whether the worms be alive or dead, provided they be driven out of the body, and this can be effected with safety. If by the remedies enumerated in the preceding paragraph, worms can be killed, or at least so weakened as not to be able to stick fast to the intestines, they can be the more easily driven out by purging remedies.

Hippocrates^h made use of purging remedies to drive the broad worm out of the body. Thus he expresses himself: *Quod si quis hominem lumbrico laborantem curet et medicamentum aut potionem dederit, siquidem homo probe preparatus fuerit, totus rotundus ut globus prodit & homo sanus evadit*: If a person that attends one troubled with a worm, gives him either
 “ a medecine or a potion, if the man has been pro-
 “ perly prepared, it comes out entire like a round
 “ globe, and the man recovers.” He afterwards adds, that if a part extended into the rectum be broken off of the worm, being two or three cubits in length, or much longer, then the man is not cured; and indeed frequently there are no symptoms discovered in the excrements, but the worm afterwards

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grows.

^h De morbis lib. 4. cap. 15. charter. Tom. VII. pag. 614.

grows. These particulars answer exactly to the observations of the moderns. For whilst the broad worm is forced out entire, it always appears rolled up in a bottom, and it has at the same time, a small extremity which ends in a top shaped like a globe; which is now-a-days generally called the thread of the broad worm. *Andry*ⁱ has given a representation of the broad worm thus rolled up.

It is known to all who are but moderately versed in the writings of *Hippocrates*, that *Φάρμακον* and *Φαρμακείν* are expressions which he does not use in speaking of all remedies, but chiefly in speaking of purging remedies. It is at the same time certain that the purgatives of the antients were very strong; for they frequently made use of hellebore, Cnidian grains, and preparations of the juice of wild cucumbers. Thus *Hippocrates*^k acknowledges, with regard to *Scamander*, who died in convulsions upon the eighth day after he was first attacked by them, that he might have held out longer if he had not taken strong physick, which purged away the pure bile. Other similar instances are to be met with^l, chiefly the case of a strong, healthy woman, who having taken a pill when lying in, was seized with a pain in the belly, and gripes in the bowels; she swelled, she vomited blood, but not in great quantities; her disorder was so severe, that in five days time, she was thought to be dead. Thirty firkins of cold water were to be poured upon her body, which was the only thing that seemed likely to give her any relief, as a great quantity of bile had afterwards been voided downwards. She lived notwithstanding.

It will be easily believed, that when so much disorder is occasioned in the body, even the broad worm cannot resist it. Hence the antient physicians used great caution before they gave a purging remedy:

Quum

ⁱ Sur la generat. des vers, pag. 33.

^k Epidem. lib. 5. text 10. charter. Tom. IX. pag. 336.

^l Ibid. textu 25. & seq. pag. 342, 343.

Quum quis corpora purgare velit, ea meabilia facere oportet: “ When a physician desires to purge bodies, he should make them fit to be pervaded^m. See what has been said upon this subject in sect. 605, No. 13. For this reason, *Hippocrates* at the same time that he advises to attempt driving out the broad worm, directs that the body should be well prepared before any strong physick be given. Bathing, soft food and repose, were thought necessary for those that were to take hellebore. A young man who was troubled with a virulent gonorrhæa, had the orifice of his urinary passage covered over with warts; when he came to me for relief, I gave him a strong purge composed of *Turbith minerali, scammonio, resina jalapi*: “ Mineral turbith, scammony, “ and jalap.” He was violently purged by this remedy; the gonorrhæa grew better; the warts being become shriveled and flaccid, fell of themselves a few days after. But he, at the same time, shewed me a broad worm entire, with it’s thread, which had been driven out by the force of the physick. He knew that he had a broad worm, but being uneasy about his venereal disorder alone, he did not mention it to me. He acknowledged that he had taken many remedies for the worms, but to no purpose. I afterwards tried a similar remedy sometimes with success. As it greatly disorders the body, I gave it twice in a month; scarce was it taken three times, when the worm came out entire.

If the *hydrogogum argentum Boylei vel Angeli Salæ*: “ Purging silver of Boyle or Angelus Sala,” be prepared carefully by artⁿ; and two grains of it be pounded very small in a glass mortar, with six grains of loaf sugar; and they then with ten grains of paste, be formed into pills, and these be swallowed by a grown man when fasting, who is at the same time to drink four or six ounces of warm honey and water, a purging

^m Hipp. aphorism 9. sect. 2. charter. Tom. IX. pag. 49.

ⁿ H. Boerh. chem. Tom. II. pag. 467, 468.

purging by stool follows : *Necat lumbricos, tænias, ascarides.* *Cavendum a nimio usu ; a nimis larga dosi cavendum : rodit semper et labefactat, ventriculum imprimis.* *Quod vitii rob juniperi baccarum sanat :* “ It kills broad worms, belly worms and ascarides. “ The excess of it should be refrained from ; too “ large a dose should be refrained from : it always “ gnaws and weakens, the stomach chiefly. Juniper-berries boiled and thickened into a consistence “ with sugar and honey, cure this disorder.”

The celebrated *Boulduc* °, examining the herb called hedge-hyssop, which is reckoned amongst the most powerful medicines, purge away the watery humours, and causes great evacuations both upwards and downwards, when it is taken either in a substance or an infusion, found that this little plant has a surprising power of destroying worms, especially if it be poured into fresh milk, for then it acts more gently. In *America*, they prepare a decoction of the *Spigelia Linnæi*, which is so poisonous that the *French* have given it the name of *Brinvilliers*, a woman famous for poisoning. It causes evacuations both upwards and downwards, and fails not to drive out the worms. But as disorders occasioned by worms are there very common, they prepare a syrup of this decoction, that in every season of the year, they may have an efficacious remedy for this disease at hand. This I heard from a witness worthy of credit. But *Patrick Brown* * speaks advantageously of the certainty of the virtue of this plant in killing worms ; but he declares that it causes sleep like opium. At the same time he gives us to understand, that after this remedy has been administered, a gentle purge of an infusion of senna, rhubarb and manna, &c. should be given.

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° Acad. des scienc. l'an. 1705. mem. pag. 246.

* Civil and natural history of Jamaica in three parts, in folio, London, 1756, pag. 156. Car. Linnæi amœn. academ. vol. 5. pag. 140.

It is obvious enough, that all these strong purging remedies cannot be given without the utmost caution, and can scarce ever be administered to tender children. But there are milder purgatives which have great efficacy notwithstanding. *Jalap*, a well known purgative, and frequently used by the vulgar, furnishes us a remedy; of this, *Webster* ^p says what follows: *Gialappam lumbricos latos præ multis expellere, primum caste, postea plurimis experimentis, didici*: “ I “ learned first by accident, and then by reiterated “ experiments, that few things drive out broad “ worms better than jalap.” A scruple weight of the gum of jalap, having been given to a dog six months old, which was afterwards dissected alive, symptoms of inflammation were found in it’s stomach and intestines ^q; but this seems less to be apprehended from the powder of jalap root, which I rather chuse to use than it’s gum, which is extremely tenacious, and easily sticks to the surface of the stomach and intestines, and then often occasions gripes and over-violent purging. But as such a jalap root is chosen as has resinous streaks, hence I take the precaution to have it’s root pounded in a glass mortar, with half the quantity of pure, dry sugar; for thus the resinous tenaciousness which occasions the most apprehensions, is broken. A woman of forty years of age, who when the time of her courses was approaching, was accustomed to void cucurbitine worms, which were very lively, had also a year before, voided some ells of broad worm by stool, so that there could be no doubt of her having a broad worm. I tried the most noted remedies for the worms; she had long used copper dissolved in the brine of sal ammoniac, but without effect. Her feet, her legs, her thighs, and at last her belly began to swell. When she was weak and languid, I gave her half a dram of jalap root long pounded with sugar, and

^p Cicut. aquat. histor. & noxæ, cap. 15, pag. 224.

^q Cicut. aquat. histor. & noxæ, cap. 15. pag. 222.

and she soon after voided a broad worm almost six ells long, which was alive and moved with alacrity. She however afterwards died of a lingering dropsy.

It has sometimes been found beneficial to fill the whole intestinal tube for several days with rank vapours, which are thought to be destructive to worms, these have been treated of in the foregoing paragraph. Thus for example, during three or four days, I gave a few grains of *asa foetida* to be swallowed three or four times a day, and afterwards I gave a pretty strong purge, always taking into consideration the strength and age of the patient. This method often proved successful.

Others chose rather to mix remedies for the worms with purging draughts, that these things which are hurtful to the worms, may be carried the more quickly through the whole tract of the intestines. I sometimes found this produce good effects, and many observations confirm it's efficacy^r. *De Lille*^s declares, that, *Extractum hellebori nigri cum vitriolo martis*: "That the extract of black hellebore with
" the vitriol of *Mars*," never proved unsuccessful, when all other remedies for the worms had failed: *Ex sale polychresto, jalappa, valeriana, ad drachmam sumptis, additis oxymellis scillitici une: 4, uncia media corticis Winterani & vini generosi libris duabus*: "Out
" of salt fit for many diseases, jalap and valerian
" taken in the quantity of a dram, with the addition
" of an ounce of oxymel of squills; four ounces
" and a half of *Winter's* bark, and two pounds
" weight of generous wine." *Storck* made up a remedy, of which four ounces a day were given to grown persons; but only a dram or two^{*} to children with equally happy success. In this remedy, there are ingredients which attenuate the phlegm, the receptacle of worms; others which are thought to be destructive.

^r *Acta physio. med. natur. curios. vol. 9. observ. 14, pag 41.*

^s *De palpitat. cord. pag. 255.*

^{*} *Ann. medic. secund. p. 228, and 286.*

destructive to worms and the root of jalap, which purges.

From all these particulars, it seems to be evident, that the cure of diseases occasioned by worms, is chiefly to be hoped from purging remedies. The remedies which are praised as discoveries, and which have been often approved of for their happy effects, were chiefly things which unhinge the body, and cause evacuations upwards and downwards.

The remedy discovered by Mr *Herrenschwand*, which has not been yet made public, and concerning which, we know the particulars which follow, seems to belong to this class^u. There are four powders, the first of which is taken the day before the medicine is taken, as a preparatory remedy. A light supper is allowed the patient; and whilst he prepares for bed, two spoonfuls of the oil of almonds or olives, is given him. On the next morning, the patient, whilst his stomach is empty, takes the first dose of the specific remedy, which usually twice causes a slight vomiting, and as many evacuations by stool; these latter always follow, but the vomiting not always; it seems to be occasioned by the motion of broad worm. In the space of two hours, both the vomiting and the evacuations by stool, discontinue; then broth is given to the patient. This done, the second dose is given; this has just the same effect with the first, but generally the broad worm is voided, so that there is not always any occasion for a third dose. But if the worm has not yet been voided, after a third dose, it does not fail to come out sooner or later, often alive, and always entire, with it's thread. Nor is the patient more fatigued by this remedy, than by any other purging remedy. The inventor of this remedy declares, that he has given it three and twenty times, and always with equal

^u Biblioth. raison Tom. XXXIII. Octob. Novemb. Decemb. pag. 281.

equal success to patients of different sexes, constitutions and ages, even to the tender and delicate.

All this was afterwards confirmed by the observations of other physicians.

The worthy inventor wrote to me to the same effect, in several very polite letters; and added, that in two hundred cases, the remedy failed but eight or nine times. He then expressed himself as follows: *Omnes ægri sic curati erant, Helveti circa Genevam, Neufchatel, de Biena, & de Mont; neque per duos cum dimidio annos, quo dedit hoc specificum, ullus rediit querens de hoc verme; quum tamen subaudiverat rediisse in Hollandia post usum hujus specifici quod fortiter purgat sursum et deorsum. Bis vidit duos vermes latos excretos ab eodem ægro qui pessime ægrotaverat. Plures ægri simul vermes teretes & ascarides excreverunt. Servat colon caninum, cujus tunice villosæ adhærebant in spatio quod nummum imperialem æquat, duæ tæniæ completæ et adhuc tria filamenta quæ singula singulis punctis tunicæ villosæ affigebantur:* “ All the sick were thus cured
“ among the Swiss about Geneva, Neufchatel, de
“ Biena, and de Mont; nor during two years and
“ a half that he gave this specific, did any patient re-
“ turn complaining of this worm; he heard how-
“ ever, that it had returned in *Holland* after this spe-
“ cific, which purges violently both upwards and
“ downwards, had been used. He twice saw two
“ broad worms voided by the same person, whose
“ disorder was very severe. Many patients voided
“ at the same time both smooth worms and ascarides.
“ He keeps by him the colon of a dog, to the villous
“ coat of which, there stuck in a space equal to that
“ of a crown piece, two compleat worms, and three
“ threads besides, each of which was fixed to a par-
“ ticular spot of the villous coat ”

Bonnet ^w, so much celebrated for his knowledge of natural history, and of other sciences, speaks of this specific

^w Mem. de mathem. & de phys. present. a l'academ. royale de scienc. Tom. I. pag. 479.

specific remedy for the belly worm. It is a light powder, exceeding subtile, and of an olive colour, which seems to belong to the vegetable kingdom; in it there appear to the naked eye, and still more through a glass, shining particles; it smells of saffron, and has a flavour somewhat saltish. On the day before this specific is administered, he at four o'clock in the afternoon, gives in warm water, six grains of a white dust, which contains *vitriolum Martis*, nor is any sensible effect occasioned by it. This powder is not however absolutely necessary to effect the cure. At seven o'clock, a light supper is given; two hours after, a spoonful of oil of almonds or olives is given. The next day there is a powder given every two hours, which in weight equals a dram or four scruples; the quantity being either increased or diminished, according to the different degrees of strength in the patient. There are never more than three doses given. Sometimes the first dose produces no effect; sometimes it causes a slight vomiting; there often follows an evacuation by stool; then broth is given. If the worm does not come out, as is generally the case, a second dose is given, and even a third if there be occasion for it. But this remedy does not operate without putting the patient to some pain. For sometimes it purges violently both upwards and downwards, gripes are felt in the bowels, and the pulse beats high. Sometimes the remedy operates much more gently. The belly-worm is frequently voided in the afternoon; at the latest, it is voided the next day either night or morning. It happened four times at *Geneva*, that the belly-worm was voided after taking the first dose. If it should happen to be of a considerable length, the patients feel the same pains as are felt by persons in a dropy after they have been tapped, that the water may come out, except the belly be properly strengthened. Some languish for a day or two, others are seized with a fever; others are so little affected by
this

this remedy, that they are able to go out the same day.

As it happened twice at *Geneva*, that no worm was voided upon taking the remedy, when perhaps it had before been voided by the patients, unknown to themselves, in order to be certain that there is a belly-worm in the case, he gives half an ounce *Syrupi florum persicarum*: “Of the syrup of peach flowers;” for if there then come out with the excrements, grains or little white lumps, which he looks upon as the excrements of the belly-worm, he thinks that there can be no doubt that there is one in the body.

But whilst *Herrenschwand* administered his remedy at *Basle*, he was surprised that the broad worm never came out entire, by always bit by bit. But those belly-worms belong to the second species of *Platerus*, which he takes to be more difficult to force out than others.

But that preparatory powder, which is taken the day before the remedy is taken, though it is not absolutely necessary, is thought to have a good effect in making the specific act better and more expeditiously the day following. *Van Doeveren* * declares, that *Herrenschwand* assured him: *Suum remedium non convenire in illa tæniæ specie quæ, ubi in intestinis nidulatur, portiones suas cucurbitini formes dimittit; cum hanc rarissime expellere possit; solam alteram speciem quæ non dimittit articulos & secunda nostra videtur (articulis brevioribus) constantissimo effectu ab eo expelli*: “That
 “ his remedy was not suited to that species of belly-
 “ worm, which when it takes up it’s residence, drops
 “ out pieces of itself, resembling cucurbitine worms
 “ in form, as it can very seldom force out this; but
 “ that only that other species which does not drop
 “ out pieces of itself, and which seems to be of our
 “ second class (with short joints) is constantly driven
 “ out by it.” At the same time, he proves by many observations, that that remedy is not so gentle and
 mild,

* Dissertat. de verm. intest. pag. 73, 74.

mild, but often occasions great disorder in the body. In the *Materia Medica* at this article, there are many prescriptions of purging remedies for young persons.

S E C T. MCCCCLXXIII.

MOREOVER clysters, suppositories, external ointments are highly beneficial for the same disorders.

The use of external ointments was treated of in sect. 1370.

Suppositories are generally prepared of bitter things, and such things as are thought to be most destructive to ascarides; but, as has been already observed, these worms as they are very lively, soon go to a different place, if they find any thing disagreeable at the extremity of the intestinum rectum. Suppositories purge either by their bulk or their stimulating quality, whilst they irritate the intestinum rectum. Clysters too do not reach to the small guts; and for that reason, they can hurt only those worms which take up their residence in the great guts. They are likewise useful in this respect, that purgatives may be given to peevish children by means of a clyster, which if they be given in a triple dose, produce the same effect as if a simple dose of a purging remedy had been swallowed.

But physicians have recommended clysters upon another account, namely, to make the worms change their place. They gave bitter potions to be drank, and at the same time took care to have milk injected at the anus, in hopes that the worms abhorring bitters, might be allured by the smell of the milk, to quit the ventricle and small guts, and descend into the great guts, that so they might be the more easily

killed by other clysters, or more expeditiously driven out by purging remedies.

Nay, *Duretus* was of opinion^y, that the worms must necessarily die by change of place alone, as they live upon chyle, which he would not allow to be ever found in the great guts. Thus he expresses himself: *Quæ causa est, cur sapientes medici potiones amaras exhibeant, presertim e scordio: lac autem subjiciant, ut illic fugati hinc vero allecti, relicto jejuno descendant in colon, ubi vel ad punctum temporis durare non possunt vita superstite. Omnia enim, quæ vivunt, quæque moventur in suo quæque loco servantur, & aluntur ex quibus constant:* “ Which is the reason why skilful physicians give bitter potions, especially those composed of water-germander, and inject with milk, that being on one hand driven away, and on the other allured, they may leave the jejunum, and descend into the colon, where they cannot even stay a second without losing their lives. For all things which live and move, are preserved in their peculiar place, and there they receive the nourishment which supports them.” At the same time, it is certain, that the contents of the great guts, were not entirely destitute of chyle, as anatomy has discovered lacteal vessels which absorb the chyle as far as the intestinum rectum. Besides it appears from what has been already said, that bitter things are not so destructive to worms as is generally thought; and that living worms are found in the great guts, not round worms and ascarides only, but even the belly-worm; and *Herrenschwand* found not one only, but several in the intestine colon, as was observed in the foregoing paragraph.

But in the *Materia Medica*, there are many prescriptions of clysters and suppositories, consisting of various remedies against the worms; and many of the like nature may be made upon the model of these.

S E C T.

S E C T. MCCCLXXIV.

WHEN the teeth are breeding, especially the sharp teeth, there arises from the tension, pricking and tearing of the nervous and bloody gums, an inflammation, a swelling, a gangrene, a convulsion, an evacuation of green excrements, salivation, a fever, death.

It appears from the observations of *Eustachius*^z, that there are seen in new-born children, when both jaws are dissected, teeth partly slimy, partly bony, whose magnitude can be easily discerned by the eye, fortified round with a sort of fences, which will afterwards force their way out. These teeth being drawn out by a skilful hand, a very narrow interstice scarce converted into bone appears; which being removed with equal care, teeth occur, which are almost entirely slime, and much less in size, which lie hidden in their peculiar cavities, behind the others mentioned before. Those last generally come out about the seventh year, a little sooner or later, when the first have fallen. So that ocular inspection shews, that the teeth which shoot out about the seventh year, are no way joined with the former, and cannot even touch them, as there is a bony interstice between both, which separates the first and second tooth from each other; which being afterwards perforated, the second tooth will force it's way out at the proper time.

So that the notion, that the second tooth springs from the root of the former which is left behind, falls to the ground^a. And the celebrated *Albinus*^b found the first and second teeth, not only in children newly born, but even in embryo's: but then they were not

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at

^z Traſſat. de dentibus.^a B. S. Albin. acad. annotat.

lib. 2. pag. 3, & ſeq.

^b Ibid. pag. 9.

at that time separated by a bony hedge. I have sometimes observed the same thing in miscarriages.

But a great diversity is observed in the time when the teeth come out. It is generally agreed that the teeth begin to grow about the seventh month; but it sometimes happens, and I myself have known instances of it, that a tooth or two is to be seen in the jaws of children just born; nay, in a miscarriage of five months, I saw two fore-teeth which plainly grew out of the lower jaw. On the other hand, in a healthy, vigorous and plump girl, the first tooth came out in the nineteenth month, the others following very speedily, and without causing any pain. In the weak and sickly, the teeth sometimes begin to grow somewhat later. From these observations it appears, that even in the course of nature, the fore-teeth begin to grow at different times in different children. A much longer delay has been observed in the growing of the second teeth. *Helmontius*^c saw: *Anno sexagesimo tertio ætatis senem, & vetulam, quibus quondam amissi dentes sponte renascebantur, etiam cum doloribus puerilibus. Nullam tamen notavit vitæ longævitatē, eo quod uterque eodem anno mortem oppetierit*: “ An old man and an old woman, in the
 “ sixty-third year of their age, in whom the teeth
 “ which they had before lost, grew again of their
 “ own accords. But he did not find that they lived
 “ the longer for that, as both died within the same
 “ year.” We read^d of a carpenter of eighty-four years of age, in whom there grew in the space of two years, four teeth, two fore-teeth and two eye-teeth. I myself saw two cheek teeth grow in an old woman who was past her eighty-sixth year; she died in the eighty-eighth year of her age. It is surprising that the rudiments of teeth, which were to grow in so advanced an age, could so long lie hid in the jaws.

Hence

^c In the chapter *Arcana Paracelsi*, pag. 626, col. 2.

^d *Academ. de scienc. l'an. 1730. hist. pag. 56.*

Hence *Moschio*^e wisely laid it down as a rule, that the teeth begin to grow in the seventh month, but that this does not hold equally in all children.

Indeed, according to the course of nature, teeth grow out of each jaw; however, they sometimes grow out of other places. I have seen a cheek-tooth grow out of the midst of the palate. *Ruyfch*^f kept in his cabinet, a bone of a human palate, from the midst of which, there grew a cheek-tooth. An account has been given of many deviations of the teeth^g.

The fore-teeth generally come out first of all, but most commonly before the eight fore-teeth have all come out; one or two or the cheek-teeth come out. Then there follow, but with a considerable interval between, four eye-teeth. We read^h, that in *North-America*, in an island which is named from the dogs that are found in it, the inhabitants have smooth teeth like the cheek-teeth. It would gratify our curiosity, if we could know whether such fore-teeth grow in them first, as they grow out of the jaw-bone with as much difficulty as the cheek-teeth.

Therefore as the teeth lie hid in their holes, not those only which are first to come out, but others likewise which usually grow about the seventh year, begin to be increased in bulk; whilst they strive to come out, they are fortified with a hard crust, that they may afterwards be able to perform their functions. I believe the manner in which this is effected, is not yet known to us: for who could ever give a clear and solid reason why the first tooth begins to increase in bulk, to rise and to make a passage for itself, whilst the second tooth which is under it, continues unmoved, but will do just the same in the space of seven years? We plainly see this effected, though we do not know the manner how. These sprouts of

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^e Spach. gynæc. pag. 10. No. 117.

five catalog. rar. pag. 177.

cap. 13. pag. 52.

pag. 446.

^f Mus anatom.

^g Albir. academic. annot. lib. 1.

^h Academ. de scienc. l'an. 1722. mem.

the teeth stick in the holes of the jaws; but the passage from each of these holes is covered with a membrane tolerably dense, resembling a sort of leather, which must be bruised or even torn by the tooth; so that after the tooth has burst out, scraps of this torn membrane have been observed by *Herissant*ⁱ, a person of great accuracy in the investigation of these matters. Afterwards, these scraps being dried, fall of themselves. The tooth which is to burst out, must therefore exert force sufficient to break this membrane. The admirable *De Lafone*^k, who has published excellent observations concerning the organization of the bones and the teeth, is of opinion, that after the upper part of the tooth has grown hard, the inward slimy part continuing to vegetate, and not being able to surmount the hard obstacle in the upper part of the tooth, presses upon the lower parts where there is less resistance; and he imagined that the roots of the tooth were formed by this mechanism, which being produced below, and meeting with the bony hedge which lies between the first and second tooth, they can descend no longer, but the same force that lengthens out the tooth continuing to act, the upper part of it must necessarily be raised, so that the membrane which covers the holes, must be raised insensibly, and the tooth will come out. This is certainly an ingenious explanation, and yet it does not solve the difficulty just started, as there does not appear to be any reason why this vegetation should act so powerfully in the first tooth, whilst it for so many years remains without force in the second tooth, which is so near the first. Besides, I took out and examined several first teeth when they began to be loose, and in many, I did not find even the smallest appearance of a root. Skilful surgeons, who were justly looked upon as very expert in curing disorders of the teeth, were surprised at this. They were agreed

ⁱ Academ. de scienc. in 4to. l'an. 1754. mem. pag. 431.

^k Ibid. l'an. 1752. mem. pag. 168.

agreed that the teeth, which generally fall about the seventh year had had roots; whilst they with very little force took out those that were loose, they found no roots. In order to explain this, they said that the second tooth whilst it rises, rubs the roots of the first, and so reduces it to a very subtile powder which might vanish entirely, for no body ever found it. But could the action of the second tooth, slowly ascending, whilst it moves the first out of it's place, have such power as to reduce the roots of the former to powder. *Bourdet*¹, a great proficient in this branch of surgery, asserted, that the first teeth before they are loosened, have roots as strong and hard as the second. But whilst *Bunon* refutes the opinion of those who maintained that the roots are destroyed by the friction of the second tooth ascending, he appeals to what is found in the jaws of a person just dead, whilst the second teeth begin to ossify; and the first teeth, called the milk teeth, are still in their places: *Sive firmi adhuc hæreant*: “Whether they still stick “firmly,” or are already loosened to a certain degree. For it appears, that the second tooth whilst it rises, continues rolled up in it's membrane, till it is upon the point of coming out. Therefore a membrane is placed between the roots of the milk-tooth, and the second tooth which is rising. But the roots of the milk-teeth are now destroyed before the second teeth can touch them. Besides, but a little distance is observed between the first tooth and the second, wherefore he concluded, that the root of the milk-tooth is consumed by another cause; and not by the friction of the tooth underneath. For this reason, he chose rather to believe that some sharp humour is separated from the adjacent parts to consume these roots.

I must own it appears to me a much more probable opinion, that the milk-teeth are without roots. The celebrated *Albinus*^m, treating of these subjects, says,

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Quum

¹ Recherch. & observat. sur l'art. du dentiste, sect 5 pag. 511.

^m Annot. academ. lib. 2. cap. 2. pag. 10.

Quum dentis naturam dentes induunt, testa quædam primum oritur forma folliculi patuli. Eaque ad corpus dentis pertinet, radice nondum inchoata: “ When teeth assume the nature of a tooth, there first rises a sort of shell in the form of an open husk. And this belongs to the body of the tooth, the root being not yet begun.” I have often seen such bodies of teeth, without any appearance of roots, in the dissected jaws of abortions and children just born. There are copper plates with admirable representations of theseⁿ; where may at the same time be seen in what manner roots are successively protruded from the body of the tooth. The tooth was of consequence without roots, and whilst the milk-tooth falls, it is without roots. Does it seem probable that roots have grown to the milk-tooth, and have again been destroyed before it fell, whilst no probable cause of the destruction of the roots could ever be discovered. It appeared evidently from what has been already said, that this could not be occasioned by the friction of the second tooth as it rises. How precarious a resource is a corrosive liquor upon such an occasion.

But certain observations seem to shew that the milk-teeth if they do not fall at their proper time, or are not taken out when they grow loose, are capable of protruding roots from their body, by which being afterwards fixed in the jaws, they stick there during the whole life.

I have often attentively examined milk-teeth, which either fell of their own accord, or were taken out by the hand of a surgeon, and have found the lower border not even, but here and there rough with prominences and sharp pieces jutting from it, which in those in whom the milk-teeth had been longest left, I found much longer than in others, with their concave answering to the convex surface of the tooth underneath; so that they plainly suited themselves

ⁿ Ibid. tab. 2.

themselves to the neighbouring obstacle, that they might be able to descend the lower. *Bourdet*°, who has been already spoken of with applause, saw the same things, though he was of a different opinion. Six weeks before, an eye-tooth had perforated the upper part of the gum in the upper jaw of a girl of sixteen years of age: the milk eye-tooth which answered to it, had kept it's place; it was however very loose; whilst he took it out, he saw that it had some part of a root, and that this was made uneven by certain points or roughnesses: hence one of those who were with her, firmly believed that the tooth being broken, the root had remained in it's hole: he acknowledges that he could hardly convince her of the contrary. Besides, I have often known the milk-teeth too much pressed by the two next teeth not to have been loosened at the time, that it should fall according to the course of nature, and therefore left in it's place at the same time that the second tooth emerging, pierced the jaw-bone either before or behind, whereby deformity was sometimes occasioned; to remove which, the milk-teeth now firmly sticking, was endued with roots whilst it was taken out. Whence it is justly concluded, that the milk-tooth can produce roots downwards. For if, according to the opinion of many, the roots of the milk-tooth had been consumed at the time that it was to fall, new ones would have sprouted up; and then we would be obliged to allow that roots had twice grown in the same tooth. Whence it appears, that the milk-teeth, according to the course of nature, are without roots, when they fall of their own accord; but that they are capable of producing roots if left long in their place; and that often in milk-teeth, when they fall of themselves, or are pulled out when loose, the first traces of the sprouting roots are discovered, which are by some looked upon as the remains of the worn out roots that were there before.

But

* Recherch & observ. sur l'art du dentiste, pag. 52, 53.

But though the sprouting of the teeth be natural, and happens in many children without causing much uneasiness; in some, notwithstanding the breeding of teeth is attended with very bad symptoms, which are sometimes attributed to other diseases, though they proceed from the breeding of teeth alone. Wherefore Sydenham^p earnestly advises, to examine with the utmost care at the time that epidemic fevers are rife, and children are taken ill, whether that fever should be referred to the epidemic disorder, or proceeds from the breeding of teeth: *Vulgo enim notissimum est, infantes, a doloribus ex dentitione ortis, sæpius in febres agi, quæ haud ita facile ab alterius generis febribus internoscuntur*: “ For it is generally known
 “ that children are often by the pains arising from
 “ the breeding of teeth, thrown into fevers, which
 “ cannot be easily distinguished from fevers of a
 “ different sort.” It is therefore worth our while to consider those symptoms, which shew that the breeding of teeth is at hand, or is already begun.

It appeared from what was before said, that the time of breeding teeth was very uncertain, and therefore is not of much importance amongst the symptoms of tooth-breeding, excepting that it excites the attention of the physician, and makes it necessary for him to be particularly watchful about the seventh month.

Hippocrates^q, when he treats of the diseases peculiar to the several ages, says: *Ad dentitionem vero productis, gingivarum pruritus, febres, convulsiones, diarrhæa; ac maxime cum caninos dentes edunt, crassissimis pueris ac duras alvos habentibus*: “ To those
 “ who are come to breed their teeth, there happen
 “ itchings of the gums, fevers, convulsions and
 “ loosenesses, and chiefly when the eye-teeth are
 “ breeding, and to the fattest children, and those
 “ that are costive.” The first symptom of the
 breeding

^p Schedul. monit. de nov. febr. ingross pag. 674.

^q Aphor. 25. sect. 3. charter. Tom. IX pag. 120.

breeding of teeth beginning, that I could observe, was, if the upper arch of the jaw, which is formed of the converging plates of the holes, begins to grow broader; these plates insensibly separating from each other, that room may be made for the tooth, which is upon the point of bursting out. This seems to be effected by the tooth ascending insensibly; at this time they seem to feel an inward itching, as it were, in the jaw itself, whilst they perpetually rub their faces, chiefly their nostrils and chin; for neither do the gums, nor the membrane which covers the holes, yet appear red or stretched. At the same time, the children are less quiet at night, and more peevish than usual, nor is this a bad symptom. For *Hippocrates*^r has given us to understand, that: *Quicumque dentientes bene habiti manent & altiori somno premuntur, periculum est, ne convulsione corripiantur*: “There is
 “reason to apprehend, that such children breeding
 “teeth, as are quiet and sleep sound, may be seized
 “with convulsions.” *Harris*^s reckons two times of teeth breeding; one whilst the tooth strives to emerge out of the jaw-bone, and then these symptoms are observed. He admirably observes, that at this period of tooth-breeding: *Gingivam in parte externa et superiori, absque aliquo ejusdem tumore, albido quodam circulo circumscribi*: “The gum is surrounded with a
 “sort of whitish circle in it’s external and upper part,
 “and that without any swelling of the same.” Sometimes there appear two such places, or more, as if the tooth upon the point of coming out, shone through the gum. Sometimes this period of tooth-breeding lasts for some weeks before the other begins: *Quo dens mole jam auctior & major factus, gingivam tumidam semper reddit, inflammationem insignem in eadem parit atque eam perrumpere omni vi conatur*: “In
 “which the tooth being increased in bulk, and become bigger, always makes the gum swell, causes
 “a remark-

^r Lib. de dentit. text 9. charter. Tom. VII pag. 871.

^s De morbis acut. infant pag. 35.

“ a remarkable inflammation in it, and makes an
 “ effort to break through it with all it's force.”
 This is true of a difficult breeding of teeth ; but this
 is often effected more easily, and then all these
 symptoms are so slight, that the tooth may come out
 unperceived by those that take care of the children.
 At the same time, there is a greater quantity of spit-
 tle than usual, and sometimes a cough : there is a run-
 ning at the nose, the cheeks are red through the irri-
 tating of the emerging tooth, the humours having
 flowed to the head in a greater quantity than usual,
 as appears from many symptoms, which are to be met
 with, collected in authors.

Thus *Moschio* ^t expresses himself : *Gingivarum pru-
 ritus, fervor generum ; dolor nervorum in cervice ; fre-
 quentius sanguinolentus humor per os, vel aures, exit :*
 “ There is an itching of the gums, an heat in the
 “ cheeks, a pain of the nerves in the neck, frequently
 “ a bloody humour comes out at the mouth or the
 “ ears.” We likewise in *Aetius* ^u, meet the follow-
 ing observations concerning the breeding of teeth :
*Circa septimum mensem infantes dentes producere incipi-
 unt, punguntur, stimulantur, tanquam a paxillo quodam,
 separante gingivas dente. Inflammationes succedunt gin-
 givarum & maxillarum et tendinum ; quas febres ple-
 rumque sequuntur. Succedit et pruritus in meatibus au-
 ditoriis & aures humescunt ; nonnullos ophthalmia cor-
 ripit et sanguis ex cantibus oculorum fluit. Pluribus per-
 turbatur venter, ob stomachi inflammationem, ventrisque
 exsolutionem :* “ Children begin to breed their teeth
 “ at about the seventh year of their age, they are
 “ disquieted, and goaded by a sort of a stake, the tooth
 “ cleaving the gums. There follow inflammations
 “ of the gums, the jaw-bones and the tendons which
 “ are generally succeeded by fevers. There also fol-
 “ lows an itching in the auditory passages, and the
 “ ears grow moist : an inflammation of the tunics of
 “ the

^t Mosch. apud spach. gynæc. pag. 10. No 118.

^u Lib. 4. cap. 9. pag. 68.

“ the eyes seizes upon some, and the blood runs
“ from the corners of the eyes. In many, the belly
“ is disordered on account of the inflammation
“ of the stomach, and the belly’s being relaxed.”

But as all these disorders proceed from the stretching, pricking and laceration of the nervous and bloody gums, it is evident enough, that these bad symptoms are still more to be apprehended when the eye-teeth burst out, as these have an obtuse top, and are pretty thick. But the fore-teeth are like a sharp wedge, and therefore they, the more easily, cut the incumbent membrane. But the cheek-teeth, though they have a wider surface than the eye-teeth, and four tops are more easily born, because those tops do not emerge all at once, but successively. It is easily conceived, that convulsions may be justly apprehended in children from an intense pain alone. Whence likewise (see sect. 1073-4.) the breeding of teeth is reckoned amongst the causes of the falling sickness: where it is also observed from *Hippocrates*, that all do not die convulsed by the breeding of teeth, but that many escape, as daily observations shew in practice. But if the gum swells, and is at the same time very red, it is a symptom of a violent inflammation, which sometimes quickly terminates in a gangrene, especially if the humours, at the same time, are somewhat of the sharpest. With regard to this subject, see what has been said in the chapter upon the gangrene. The gums being thus affected, quickly rot, and the disorder spreads to the adjacent parts, except the place affected by the gangrene be often washed: *Spiritu salis marini*: “ In the spirit of sal marinum;” mixed with *Melle rosarum*: “ The honey of roses;” and so the spreading putrefaction stopped. I have sometimes in the children of poor people, who were totally neglected, seen part of the jaw-bone fall with the holes, and the teeth contained in them, so that they were all their lives toothless in the place of the lost jaw-bone.

A voiding

A voiding of green excrements at the time of tooth-breeding, is a bad symptom. It was before said that the excrements turn green when they are troubled with an acid in the first ways, so that green excrements, might for this reason be voided by stool, though this was not occasioned by tooth-breeding. But if the excrements which naturally turn yellow in children, should on a sudden become greenish at the time of tooth-breeding, then skilful physicians are usually apprehensive of convulsions; because they conclude from that change of colour, that the common sensory, and the whole nervous system, are disordered. If a man in health be suddenly turned round and round in a circle, he is seized with a vertigo; and if this turning is not discontinued, he falls down and vomits up green gall. Wherefore it is likewise reckoned in sect. 275, a bad symptom, if after a violent blow on the head, a bilious vomiting follows.

But a looseness is rather an advantage to children. *Quibus in dentitione alvus multoties subducitur, illi minus convelluntur quam quibus ita paucies:* “ Those who whilst their teeth are breeding, are very loose, are less convulsed than those who are but a little so w.”

We have already treaty of the salivation which follows the breeding of teeth.

A fever, death.] A troublesome pain, an inflammation of the gums, want of sleep, are sufficient to cause a fever, which may certainly, if violent, destroy the tender body. *Hippocrates* * however, does not seem to have always apprehended fatal consequences from the fever which accompanies the breeding of teeth; for he says: *Quibus in dentitione febris acuta oboritur, raro convelluntur:* “ Those who are seized with a fever whilst their teeth are breeding, are seldom convulsed.” But he asserted that the
winter

w Hippoc. lib. de dentit. charter. Tom. VII. pag. 871.

* Ibidem.

winter season was best adapted to the breeding of teeth^y; so that children get over it better, *cæteris paribus*, at this, than other seasons of the year. At the same time he observed, that in those who have a cough whilst their teeth are breeding, the teeth burst out more slowly, but that they are made smaller by the pricking. For the plumpness of the body is generally diminished in all those whose teeth are breeding, and the flesh generally becomes more flaccid, especially when the eye-teeth begin to come out.

S E C T. MCCCLXXV.

ALL which particulars may be easily proved to spring from the same cause.

For the membrane which closes up and covers the holes, is gradually distended; if there already be an inflammation, and that inflamed place was to be burst by a hard tooth, the reason is obvious why all those bad symptoms, just enumerated, must follow.

S E C T. MCCCLXXVI.

BUT the irritating of the nerves being removed, (1374) they discontinue of their own accord.

Pain, as was said upon another occasion in sect. 220, and the following sections, affects the nervous fibre in such a manner as to threaten breaking it: hence the pain is more acute, when the nervous fibre is nearest breaking. Hence it appears why all pains are increased when the tooth is upon the point of bursting out, and cease again as soon as the tooth has broke the membrane which was stretched before. For the nerves then cease to be irritated. From whence
it

it appears, what we should think of all those charms and amulets, which are usually hung to the necks of children whilst their teeth are breeding, in hopes that the teeth will come out the more quickly and the more easily. The breeding of teeth is the work of nature alone; no judicious person will easily believe that nature can be easily accelerated by art. But the pains which accompany the coming out of the teeth, may be assuaged by art, as will be shewn in the next paragraph. But women are without much difficulty permitted to hang on to the neck of children, whose teeth are breeding: *Corallia rubra*, *pæoniæ radicem*, *dentes lupi*, *apri*, *vulpis*, &c. “Red coral, the root of piony, wolves, boars and foxes teeth,” and things of the like nature, which can be productive of no ill consequences. For then they are more careful to follow the physicians directions.

S E C T. MCCCLXXVII.

THIS is effected, 1. by softening, cooling, and refreshing the gums, with soft, glutinous, and antiplogistic remedies. 2. By often rubbing them against hard, smooth bodies. 3. By cutting them with a lancet.

1^o. How great efficacy all those remedies have which relax a stretched fibre that is in pain, in assuaging that pain was already shewn in sect. 228. 1. But as this membrane that keeps down the tooth, that is ready to burst out, is stretched and in pain, the reason is plain why emollient remedies have place here: but as the gums are, generally speaking, at least slightly inflamed at this time, they are for this reason refreshed with cooling and antiphlogistic remedies; which are of the highest service, if they are at the same time somewhat glutinous, lest they should be immediately washed away by the copious spittle, which runs out when the teeth are breeding. The
juice

Juice *sempervivi majoris*, “ of the greater house-leek,” just pressed out with *syrupo florum violarum*, “ the syrup of violet flowers, with an addition of the slime gummi Arabici, Tragacanthi, sem. Cydoniorum, &c. of Arabian gum, gum Tragacanth, Cydonian seed, &c.” furnishes a very fit remedy of this nature, if the gums be often rubbed with it: *Cremor recens lactis*, the fresh cream of milk, mixed *vitello ovi* & *syrupo florum violarum*, with the yolk of an egg, and the syrup of violet flowers, is highly beneficial if it be diluted with a certain quantity “ *aquæ stillatitiæ rosarum*, of distilled “ rose-water; *flores sambuci*, elder-flowers, if they are tied up in a little bundle, and laid at the bottom of a glass vessel of a cylindrical form, and fresh milk is afterwards poured upon them, and all these are gently digested chemically, a cream is soon gathered at the summit of the vessel, which has the fragrant smell of elder flowers, and is often rubbed upon the gums with a very good effect; but the lead is added to make the little bundle sink to the bottom of the vessel, that the cream may be the more easily gathered on the upper surface; at the same time lead applied externally is of great efficacy in allaying inflammations in their beginning. I am not however ignorant that the internal use of lead is thought dangerous by physicians, and not without reason: but very little of the lead is dissolved in the milk; and the little that is dissolved rather remains in the serum of milk than in the cream; so that it appears that such a remedy may be used with safety; especially as but little cream is rubbed upon the gums which are in pain, and the child scarcely swallows any of it, but it almost all comes out of the mouth with the spittle, which flows thither copiously. But if the gums, infected with a deep red, should threaten a gangrene, then a few drops “ *spiritus salis marini*, of the spirit of “ sal marinum,” are added; “ *syr. fl. violarum*, to “ the syrup of violet flowers,” with a mixture of

nitre also, and they are diluted in “*aqua stillatitia*” “*florum rosarum*, in distilled rose-water; or, *florum sambuci*, elder-flower water,” that the gums may be often fomented with such a mixture. Before, where the gangrenous quinsy was treated, as likewise in the chapter upon the scurvy, the efficacy of *sal marinum* in such disorders, was spoken of advantageously. But such prescriptions are to be met with in the *Materia Medica* at this article.

It sometimes happens that the gums are so inflamed, and in such pain, that there arises a violent fever followed by convulsions: in that case Sydenham^z recommends bleeding as the best and surest remedy; and at the same time he lays it down as a rule that children may be bled with as little danger as grown men. Harris^a acknowledges the necessity of bleeding in such cases; but he would rather have a leech or or two put under each ear: for it is certain that there is some difficulty in bleeding children, on account of the smallness of the veins, and the restlessness of their motions. Nay, even Sydenham himself^b, when he thought bleeding necessary in a fever, accompanied by a bloody flux, said, *Si infans hac febre laboret, tum hirudines duæ utrimque applicentur pone aures*: “If a child is troubled with this sort of fever, then two leeches should be put under each ear.” But it is generally that Sydenham wrote this work in the latter part of his life, and that he either altered or corrected some passages that he had wrote before.

Harris^c gives us this excellent instruction: *Interdentiendum os tanta teneritudine sæpe affligitur, ut omne alimenti genus pertinacite respuant: In hoc casu summo opere cavendum ne alimentum calidum, imo vix tepidum, infantibus præbeatur: Nam calor oris & gingivarum*

^z Prax. medic. cap. 5. pag. 248, 249.

^a De morb. infant. pag. 35.

^b Schedul. monitor. de novæ febris ingressu, pag. 673.

^c In the passage just cited.

givarum, fere exurens, vix minimum caloris adventitii gradum fert sine molestia & dolore accedenti: “ That
 “ when the teeth are breeding, the mouth is some-
 “ times so tender, that they obstinately spit out all
 “ sorts of food: in this case the utmost care should
 “ be taken not to give hot, nor even so much as
 “ as warm food to children; for an almost burning
 “ heat of the mouth and jaws can scarcely bear the
 “ least degree of added heat without pain and an-
 “ guish, uneasiness being occasioned it.” Whence
 it is that children can scarcely bear a spoonful of any
 thing, which shews the advantage of deferring to
 wean them till the teeth are grown; for they can
 much more easily bear the soft nipple of the nurse.
 Add to this, that we may give the nurse a quantity
 of emollient and antiphlogistic remedies, which may
 be of service to the child. At the same time we may
 by altering the diet of the nurse, render her milk
 more suitable to the present disease of the child.
Moschio^d acknowledges this advantage, when he ad-
 vises that the nurse should abstain from wine when
 the child's teeth are breeding, and should live upon
 mild food.

It appears at the same time that this advantage is
 given up by those who are against human milk, and
 would have children fed with the milk of other ani-
 mals.

2^o. Those who have wrote upon the breeding and
 preserving of the teeth, have adopted different opi-
 nions with regard to this point. Some have approv-
 ed of the use of milk, others have entirely condemn-
 ed it. If the inflamed gum should feel pain, the
 attrition of hard bodies would certainly hurt them;
 but then children cannot even bear the touch of
 them, without immediately discovering their pain,
 by crying bitterly. But when this is not the case,
 a gentle pressure of the gums seems to be directed
 by nature. At the time of breeding the teeth, we

see that children are perpetually rubbing their teeth with their fingers, and that they put whatever comes in their way into their mouths, and press it as strongly as they can between their jaw-bones: for they seem to feel a troublesome itching^e in their gums, which they endeavour to assuage in this manner; for they discover no symptoms of feeling any pain; on the contrary, they are in spirits, and quite easy whilst they are not kept from this work; and I have often seen very restless children fall into a profound sleep, when the nurse gently rubbed their itching gums with her finger.

Actius^e indeed advised that care should be taken not to give any thing hard to children to eat, lest the gum, being become callous, should obstruct the breeding of the teeth: the same opinion is maintained by others^f. But callosity does not seem so much to be apprehended from this friction, as the bone is always moist at the same time. Nay others^g even wish for this callosity, as they imagined that tight and hard membranes are more easily broke than the soft, which yield too much to the rising tooth. Wherefore *Andry* blamed the use of emollient remedies, except the inflammation of the gums required them; and because all the bones become more brittle in winter, he thought that it was for that reason that *Hippocrates* asserted that winter is a more favourable season for the breeding of teeth than the other seasons of the year. He adds from the observation of *Spigelius*, that the teeth sooner burst out in the upper jaw-bone, because this is oftener turned upon the nurses nipple than the lower, and is more rubbed by it of consequence.

Therefore as nature itself seems to direct rubbing the gums in children whose teeth are breeding, it will be of service to give them at that time such hard, smooth

^e Lib. 4. cap. 9. pag. 68.

^f Bourdet. Recherch. & observat. &c. Tom. I. sect. 4. p. 40.

^g Andry l'Orthopedie, tom. 2. pag. 210, & seq.

smooth bodiess, are made of chrystal, red coral, ivory, &c. so as they have no prominencies, and are made of such matter as cannot be dissolved in the saliva; wherefore those made of crystal are preferred to others: metals are rejected, the purest gold only excepted; for the silver which is used in making these things always contain a certain quantity of copper.

3°. Cutting is proper then only when the membrane which covers the hole is by the emerging tooth raised and stretched, is red, and feels intense pain; then there is generally a pretty high fever in the case, and convulsions are apprehended, except a way is suddenly made for the tooth; but after cutting the tooth instantly rises up. But if the tooth should stick still more deep whilst this cut is made, the little wound is in a short time consolidated, and the little scar will make still greater resistance to the tooth. The reputation of the physician will likewise be in great jeopardy if the tooth does not make it's appearance after he has advised cutting. I have known it happen that the tooth has not burst out till eight months after the incision has been made.

It was before observed in sect. 1374, that there are two periods in the time of teeth-breeding: the first is when the tooth first makes an effort to rise out of the jaw-bone, the symptoms of this were then enumerated. The second period is when the tooth labours to break through the gum. But *Harris* has given us to understand ^b, That, *In primo illo dentitionis molimine, æque ac in secundo chirurgi gingivas infantum quacunque ex occasione imperite incidunt; quo scilicet dentes facilius erumpant; unde vulnus citra necessitatem & nullam plerumque opem ferens, teneris promiscue infligitur; quum secundum solum dentitionis tempus (quod diligenter notandum) eam plagam inferri proprie requirat*: “ In that first effort of tooth-breeding, as “ well as in the second, surgeons at random unskil- “ fully cut the gums of children, that the teeth “ may

^b De morbis infant. p. 35.

“ may the more easily burst out ; whence the wound
 “ being unnecessary, and, generally speaking, prov-
 “ ing of no service, is made unadvisedly in tender
 “ children ; when the second period of tooth-breed-
 “ ing alone (and this should be diligently attended
 “ to) properly requires that this incision should be
 “ made.”

He was moreover against making an incision upon this occasion with a lancet, as such a wound is consolidated too soon. Wherefore he advised, *Curandum est igitur medico, ut instrumento magis commodo (sive sit scalpellum, quo calami scriptorii vulgo conficiuntur, sive sit aliud cujus dorsum in densitatem novaculæ æmulum assurgat) incisio semper fiat* : “ That the physician should take care to use a more proper instrument (whether it be an a penknife or another instrument, whose back in thickness almost equals a razor) in making the incision.” For thus the lips of the wound are more distant from each other, and grow together more slowly. It is perhaps for this reason that some would haveⁱ this membrane, which covers the hole torn with the nails ; for then the wound will of consequence be consolidated more slowly : but it is sufficiently evident that this causes greater pain, and is done by an unskilful hand, so that cutting seems always preferable in such a case. *Fauchard*^k, eminent for his knowledge in this branch of surgery, gives us to understand, that the incision for the fore-tooth upon the point of bursting out should be made along the length of the arch of the jaw-bone ; I should be inclined to think the same of the eye-tooth ; he advises a crucial incision for the cheek-tooth ; but he at the same time wisely informs us, that such an incision may be then made with safety, if the gum be red, swelled, and tight, if the tooth be perceived by the sight or touch, whilst it sticks

ⁱ Brouzet *educat medic. des enfans*, Tom. 1. p. 234.

^k *Le chirurg. dentiste*, Tom. 1. chap. 15. pag. 175.

sticks under the membrane which keeps it down; but having learned it by long experience in the art, I affirm that there seldom is occasion for this operation, even in the most difficult breeding of teeth.

S E C T. MCCCLXXVIII.

AN inconsiderable dose of sp. c. c. happily cures the convulsions, which take their rise from hence.

It was said in section 229, that the sense of pain, and many effects of pain which arise from thence, may be removed though the cause of the pain remains. Hence mild assuaging remedies prepared *ex Syr. flor. rhocad.* “from Syrup flowers of rhocad,” and from the poppy itself may safely be used for this end, to my certain knowledge, provided other things which act upon the cause of the pain be not neglected. It appears from the observations of *Sydenham*¹, that a few little drops, three or four, for example, of spirit of hartshorn, given in a proper vehicle, have been of great service in curing that fever, which accompanies a difficult breeding of the teeth, if they are given every fourth hour at four or six different times. Such a prescription is to be found in the *Materia Medica* at this article.

¹ In sched. Monit. de novæ febris ingressu, pag 675.

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